PB-230 296

LAWS AND INSTITUTIONAL MECHANISMS CONTROLLING THE RELEASE OF PESTICIDES INTO THE ENVIRONMENT

Roger W. Strohbehn, et al

Economic Research Service
Washington, D.C.

1971

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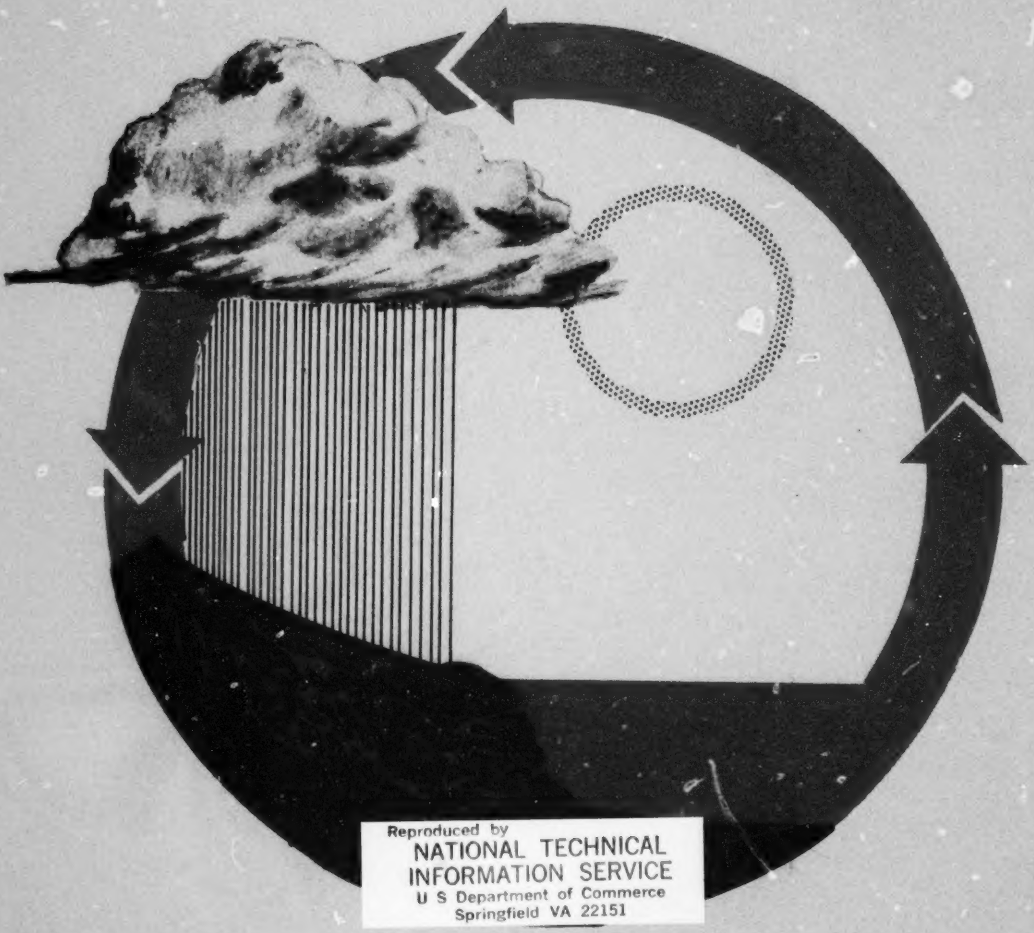

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PESTICIDES STUDY SERIES - 11

LAWS AND INSTITUTIONAL MECHANISMS CONTROLLING THE RELEASE OF PESTICIDES INTO THE ENVIRONMENT

This study is the result of an interagency agreement made by OWP as part of the Pesticides Study (Section 5(1) (2) P.L. 91-224) with the Economic Research Service of the United States Department of Agriculture.

The USDA project members:

Roger W. Strohbehn, Project Officer
Beatrice H. Holmes, Author
William D. Anderson, Author

For EPA:

Charles D. Reese, Project Officer
Carlton J. Kempter, Project Member

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This report has been reviewed by the Office of Water Programs of the Environmental Protection Agency and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency, or does mention of trade names or commercial products constitute endorsement or recommendation for use.

Acknowledgements

This report was written by Beatrice Hort Holmes and William Dyer Anderson, general attorneys in the Environmental Economics Branch, Natural Resources Economics Division of ERS. The authors wish to acknowledge the assistance given them by officials of the Federal and State Governments. Federal departments and independent agenices whose personnel supplied information or reviewed sections of the manuscript for accuracy include the U.S. Departments of Agriculture, Defense, Health, Education and Welfare, Interior, State, and Transportation; the Council on Environmental Quality, the Environmental Protection Agency, the Federal Trade Commission and the Working Group on Pesticides. Dr. Rollin M. Dennistown, of the Minnesota Department of Agriculture was especially helpful in providing the results of a survey of State procedures in restricting pesticide use.

The EPA project officer wishes to express thanks to Mrs. Babette Baltes, Mrs. Nyla Linthicum and Mrs. Lydia Greene for outstanding service as secretaries in the preparation of this report.

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SUMMARY

The existing legal framework for controlling the release of pesticides into the environment consists of Federal laws and executive orders, State laws and institutional mechanisms, international law and institutional mechanisms and the inter- and intra-agency organizations devised by Federal agencies for the purpose of coordinating pest control-responsibilities.

Federal laws provide indirect controls, of varying degrees of effectiveness, on both the use of pesticides and the release of pesticides into the environment. The most significant of these include:

1. Registration of pesticide products for distribution in interstate commerce.

2. Regulation of the amounts of specific pesticide residues that will be tolerated on raw agricultural products and processed foods, and associated research and monitoring of the effects of pesticides residues on man.

3. State - Federal water quality standards limiting toxic substances in interstate waters.

4. Provisions for surveillance of the environmental

impact of all Federal and Federally supported pest control programs.

5. Provisions for research and monitoring of the effects of pesticides on man and for training state and local public health officials.

6. Provisions for investigations of the effects of pesticides on fish and wildlife conservation, for the dissemination of the results of such investigations and for the formulation of pesticide control policy.

However, with the exception of the Federal Aviation Administration's regulation of "crop dusting" activities existing Federal laws do not directly regulate the use of pesticides. With the exception of the Refuse Act of 1899, which provides for comprehensive regulation of industrial water pollution, and of Executive Order 11507, which provides for control of water and air pollution at Federal facilities, existing Federal laws do not directly regulate the release of waste pesticides into the environment.

State pesticide laws have typically been divided into two categories: (1) those which regulate the distribution and sale of pesticides, and (2) those which regulate the use and application of pesticides.

In the first category, 49 States have statutes requiring the registration and labeling of pesticides as a condition for the lawful sale and distribution of these materials in intrastate commerce. Historically, these laws have followed substantially the comparable Federal legislation covering interstate commerce. Recently, however, a number of States have imposed use restrictions on certain pesticides. At least 20 States now have legislation authorizing use permits for specific pesticides. In 19 States, licenses or permits are required for pesticide dealers.

The second category of State laws, those dealing with use and application, are not as uniform. Thirty-one States have statutes requiring the licensing of commercial or custom pesticide applicators. At lease 19 States have legislation regulating structural pest control operators, tree surgeons, or related professions involved in pesticide application. State pesticide use and application laws may provide for extablishing qualifications for those persons engaged in the pesticide application business and for regulating the methods and conditions for pesticide application. In addition to laws controlling pesticides, many States have pest control legislation. Two types of legislatively created pest control organizations are the interstate compact and the special purpose district.

The Food and Agriculture Organization of the U.N., working together with the World Health Organization, and a number of other international organizations, including several European regional organizations are attempting the development of effective international controls on pesticide pollution. This effort is at a very early stage. However, there are many indications that a comprehensive international law limiting pesticide residues on foods is in the process of development.

This development is strongly supported by the United States. As a result, the U.S. Foreign Assistance Program is now being adjusted to enable U.S. AID personnel to give underdeveloped food exporting countries a new kind of technical assistance. The goal of this new kind of assistance will be to enable such countries to deal adequately with their pest control problems, and safeguard health conditions of domestic food supplies, while insuring that their food exports will not be rejected by food importing countries because of excessive pestidice residues.

Additional pesticide control activities of international organizations have included:

1. Sponsorship of international and regional guidelines for pesticide registration laws,

2. Sponsorship of regional pesticide residue tolerances,

3. Sponsorship of international toxic substances monitoring programs,

4. Sponsorship of standards for international limits on airborne toxic substances in the working environment,

5. Exchange of information among members regarding national standards concerning preventive pest control, regulation and use of pesticides (including prospective changes in regulatory measures) and promotion of alternative methods for pest control.

Another aspect of existing pesticide controls which has had a very significant effect on the release of pesticides into the environment, are the efforts of the Federal Government to coordinate the policies and practices of its own programs. A large number of Federal and Federally supported pest control and weed control programs as well as research on pest and weed control are conducted, in addition to the regulatory and surveillance functions mentioned previously.

Since 1964, the Government has endeavored to coordinate the aims of the pesticide registration program of the Federal Insecticide, Fungicide and Rodenticide Act with the findings of Federal research and surveillance activities on the effects of specific pesticides on foods, public health, and fish and wildlife. Until the end of 1970, this effort was undertaken through an Interdepartmental Agreement between the three Federal Departments (Agriculture; Health Education and Welfare, and Interior) with responsibilities in these areas. Reorganization Plan No. 3 of 1970 has completed this task by bringing the units of the three Departments which participated in these concerns together into one unit, the Pesticides Office of the Environmental Protection Agency.

The Working Group on Pesticides, a Federal interagency coordinating body with eight member agencies and four agency observer participants, is responsible for both policy advice on pesticides and the day-to-day coordination of Federal agencies pesticide activities. The Working Group coordinates research on pest control and the effects of control procedures, as well as programs of monitoring the environment for pesticides residues. In addition, the Working Group is concerned with safety in the storage, packaging and transportation of pesticides and in disposal of containers and wastes. The Group also conducts special investigation of pesticide problems as they arise, coordinates its activities with State and local governments and disseminates public information on pest control and use of pesticides.

The Joint Weed Committee of the Departments of Agriculture and Interior provides a forum in which Federal agencies with land and water management responsibilities meet together to exchange information and resolve problems with agencies having responsibilities for weed control research, farmer education, and the regulation of herbicide use. The Joint Weed Committee's subcommittee on Use of Herbicides in Aquatic Sites includes representatives of EPA, the Working Group, and a number of other agencies with public health and water management responsibilities as well as agencies of the Departments of Agriculture and Interior.

The Hazardous Materials Advisory Committee of the Environmental Protection Agency is a committee of non-government scientific experts whose function is to provide the Government with independent scientific advice on a variety of issues related to the effects of toxic substances on the environment.

Several other Departments which support pest control programs have their own mechanisms for subjecting such programs to environmental scrutiny -- most notably the Departments of Interior and Defense.

Reorganization Plan No. 3

The principal Federal agency in the United States with authority to take actions affecting the use of pesticides is the Environmental Protection Agency (EPA). EPA was created by Reorganization Plan No. 3 of 1970, effective December 2, 1970. Its mission is to act as the central Federal pollution abatement agency responsible for the protection of all aspects of the environment against all types of harmful pollution, specifically including pesticides. To perform this mission, EPA has been authorized to take responsibility for a variety of ongoing research, planning, and regulatory programs that previously had been scattered among a number of Federal departments and independent agencies.

EPA is responsible for the following ongoing programs related to protecting the environment from pollution by pesticides.

1. The pesticides registration program, formerly assigned to the Department of Agriculture under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and related activities.

2. The setting of tolerances for pesticide residues on food and feed, formerly assigned to the Department of Health, Education and Welfare (HEW) under the Federal Food, Drug and Cosmetic Act and related activities, as well as certain technical assistance and research functions under the Public Health Service Act.

3. The functions formerly assigned the Department of the Interior under the Federal Water Pollution Control Act.

4. The functions formerly assigned the Department of the Interior under the Pesticides Research Act, and activities of the Gulf Breeze Biological Laboratory.

EPA's period of responsiblitiy for pesticide control has thus been brief. It has been a period of national concern focused on the hazards of pesticide pollution, and of heightened Federal control activity exemplified by the recent cancellations of pesticide registrations for DDT, aldrin, dieldrin, and mirex. However, EPA is still operating under enabling legislation designed, at an earlier time, for the programs of other agencies with somewhat different agency missions.

Federal Insecticide Fungicide and Rodenticide Act

The FIFRA, 61 Stat. 163, as amended, 7 USC 135-135K, was originally passed in 1947 to regulate the marketing of "economic poisons" and "devices"; amended in 1959, 1961 and 1964.

The term "economic poison" has the same meaning as the more commonly used term, "pesticide." It is defined in the Act as "any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any insects, rodents, fungi, weeds and other forms of plant and animal life viruses, except viruses on or in living man or other animals" declared to be a pest by the Administrator and "any substances or mixture of substances intended for use as a plant regulator, defoliant, or dessicant."

"Devices" are mechanisms such as ant traps, sold together with pesticides for the purpose of application; or simply mechanisms such as electronic bug-killers, designed to destroy pests.[1]

Under the FIFRA, no pesticide or device may be legally shipped in interstate commerce for general use until it is registered. Registration is granted for a period of five years after the manufacturer or other registrant submits test data proving the pesticide is safe and effective when used as directed on the proposed label. If the agency refused registration, the applicant can appeal the refusal under the same rules applicable to appeals from cancellation of registration.[2]

As a matter of policy, registration is not granted unless the registrant also demonstrates that the use directed on the label will not result in greater pesticide residues on food and feed than the proposed residue tolerance to be granted under procedures of the Food, Drug and Cosmetic Act. The applicant is required to include in his petition an analytical method for detecting such residues.[3]

The FIFRA prohibits the shipment in interstate commerce of products that are not registered or are adulterated, misbranded, insufficiently labeled or, in the case of certain white powder pesticides, are not colored for identification purposes.[4]

Labels of registered pesticide products must contain the name and address of the manufacturer or registrant, the Federal registration number, the net contents, an accurate ingredient statement, directions for use (including the specific purposes for which the pesticide is permitted to be used), and a warning or caution statement when necessary, to prevent injury to man or vertebrate animals.[5]

With respect to warning statements, the Act itself provides that the labels of pesticides containing substances found by the Administrator to be highly toxic to man must contain the skull and crossbones, the word "poison," and the antidote, all legible and prominently displayed.[6] The regulations elaborate on this provision, and divide other pesticides into three classes of declining toxicity with correspondingly declining warning requirements.[7]

Surveillance and Enforcement

Surveillance inspectors, working out of 10 EPA regions in the United States, systematically inspect and sample pesticides in warehouses and sales outlets. The pesticides are inspected for registration, and adequacy of information, and samples are taken for chemical analysis or biological activity.[8]

If inspection reveals that products are being shipped, distributed, or sold in violation of the Act, the products may be seized and criminal action may be brought against the shipper or, if the shipper is protected by quarantee, against the registrant. Violation of the Act is a misdemeanor, which may be prosecuted at the discretion of the Administrator and is punishable by a maximum fine of $1,000, imprisonment, or both.[9] There is no provision in the Act for inspection of the premises of the manufacturer or processor, or for seizure of products before they are shipped or are on the threshold of interstate commerce.

The FIFRA requires that all manufacturers, distributors, dealers, and carriers of pesticides keep records and, when requested, furnish information requesting delivery, movement, or holding of pesticides.[10] However, the Act does not provide for mandatory recall of products found in violation of the Act. Instead, under established procedures, the manufacturer is requested to recall products voluntarily- Following this action, EPA officials may examine shipping records and make multiple seizures if such is warranted.[11] There is no provision in the FIFRA by which the administrative agency can stop the sale of violative products except by seizure of individual lots. Nir is there any provision in the FIFRA regulating the application of pesticides once they are sold.

Cancellation and Suspension

All pesticide registrations are automatically cancelled at the end of five years unless the registrant requests renewal. However, the Act provides that registrations may be cancelled (or in appropriate cases, suspended) whenever it becomes apparent that a product or its labeling does not conform with the Act. The EPA uses this authority to maintain a continuing review of previously registered products to determine whether their safety and efficacy are still adequate in the light of new scientific data.[12]

The Administrator is authorized to cancel a registration by notifying the registrant (or all registrants, if there are more than one for the same product) of the cancellation and the reason for this action. Cancellation becomes effective 30 days after service of notice, unless the registrant makes the necessary corrections or takes steps to contest the cancellation.[13]

If a pesticide is cancelled for some but not all uses (as was the case, for example with DDT in 1969 and 1970), a registrant need not take any action except to delete the cancelled uses from the directions on the label. If, however, a registrant decides to appeal the cancellation of his registration, the registration remains in force during the appeal period and the registrant may continue to market his product. The cancellation procedures may be very lengthy.

The FIFRA thus provides that within 30 days of service of the cancellation notice the registrant may appeal, either by petitioning that the matter be referred to an advisory committee of the National Academy of Science or by requesting a public hearing. (If the registrant obtains a scientific advisory committee report, he is required to pay the costs of the committee, unless the committee recommends in his favor or unless the matter was referred to the committee by the Administrator; in the latter case, he is not precluded from exercising his right to petition for an additional scientific advisory committee.) After due consideration of the views of the committee and all other data before him, the Administrator has 90 days in which to decide whether the registration should be cancelled and to issue an order. However, if the registrant is then dissatisfied with the order of the Administrator, he has an additional 60 days in which to ask for a public hearing. After the hearing, the Administrator has 90 days in which to issue a final order based on the record of th hearing, including the report of the advisory committee. The final order is, of course, subject to judicial review.[14]

It has been estimated that the average time period for completion of a fully contested cancellation is a year to a year and one half.[15] In the past, contested cancellations were not prosecuted, or much longer periods were needed to complete them because of smaller staff resources and procedural inexperience.[16]

The Administrator may suspend the registration of a product immediately, if he determines that such action is necessary to prevent "an imminent hazard to the public." This means that the "suspended" product may not legally be sold in interstate commerce unless and until the contesting registrant succeeds in his appeal of the suspension order.[17]

The Act does not specifically define the nature, magnitude, or urgency of those pesticide problems considered to "an imminent hazard to the public," but EPA has interpreted the language to mean that the pesticide must be a threat to public health, "so immediate that it cannot await the resolution of this administrative process."[18]

Section 4d of the FIFRA also provides that any person "who will be adversely affected" by an order concerning registration, cancellation, or suspension may have judicial review of the validity of the order in the U.S. Circuit Court of Appeals of his residence or place of business, or the U.S. Court of Appeals for the District of Columbia.[19] The D.C. Court of Appeals firmly stated, in the May 1970 case of Environmental Defense Fund vs Hardin, that citizens' organizations devoted to environmental protection have equal standing to seek review of an order refusing cancellation or suspension under this provision with manufacturers or registrants economically injured by an order denying, suspening, or finally cancelling registration.[20]

Federal Food, Drug and Cosmetic Act

Reorganization Plan No. 3 also transferred to EPA the function of establishing tolerances for "pesticide chemicals" under specified sections of the Federal Food, Drug and Costmetic Act (FDCA). Also transferred were some of the associated functions of monitoring compliance with tolerances and effectiveness of surveillance, rendering technical assistance to the States, and performing supportive research.

Section 408 of the FDCA, the so called "Miller Amendment," was passed in 1952.[21] This amendment authorizes the Administrator of EPA to establish residue tolerances or exemptions from tolerance, and provides in detail the procedure to be followed. It also provides that any raw agricultural commodity may be condemned as adulterated if it contains a residue of any pesticide which has not been formally exempted as safe or which is present in excessive amounts.

Under section 408, tolerances are established on raw agricultural commodities, not on processed foods. If the residues remaining in a processed food have been removed to the extent possible in good manufacturing practices and do not exceed the tolerance on the raw product, the processed product complies with the law. In practice, it has generally been found that the residues in processed food are only a fraction of the amount permitted on the raw agricultural commodities.[22] The majority of uses of pesticide in the United States are on the raw commodities, rather than on processed food. It is practical therefore to remove contaminated foods from the chain of distribution at this early point.

However, Section 409 of the Food, Drug and Cosmetic Act, the "food additives" amendment, provides for the establishment of the conditions of use of any substance "intentionally" or "incidentally" added to food, except pesticide chemicals on raw agricultural commodities. This provision has been interpreted to mean that Section 409 does apply to pesticide residues intentionally or unintentionally added to processed foods, such as residues from fumigants used in restaurant kitchens or warehouses.[23]

The Delaney Clause of the Food Additives amendment states that no "food additives" capable of causing cancer when ingested by animals or man may be added to food.[24] The United States Court of Appeals of the District of Columbia, in the leading case of Environmental Defense Fund vs the U.S. Department of HEW, ruled that the Delaney Clause does not apply to the use of DDT on raw agricultural products, in the light of the plain meaning of the language of the statute.[25]

The EPA is required to use the tolerance-setting mechanism for protecting the public from cancer and other injuries resulting from pesticide residues on food.

Petition for Tolerance

Section 408 of the Food, Drug and Cosmetic Act states that a tolerance for pesticide residues on food or an exemption from the necessity of a tolerance must be obtained for every pesticide except those generally recognized by scientific experts to be harmless to man or vertebrate animals. The FDCA states that a registrant or applicant for registration under the Federal Insecticide, Fungicide and Rodenticide Act must submit specified information to be used by the Administrator in setting a tolerance or granting an exemption. This information is kept confidential until the regulation is published.
It includes:

1. The chemical identity of the compound,

2. Specified data on the results of toxicity experiments with animals, including data on tumors and abnormalities in reproduction,

3. The amount, frequency, and time of application to the crop or crops for which it is intended,

4. Data establishing the amount of residue after the recommended application, and an analytical method for detecting such residue,

5. Practicable methods for removing residue which exceeds the proposed tolerance, and

6. The tolerance requested, with supporting data.[26]

In addition, the Administrator must certify that the pesticide has been found useful for the production of the crop or the control of the pest in question.[27]

Within 90 days after certification of usefulness, the Administrator must publish a regulation establishing a tolerance or granting an exemption for the pesticide, unless the petition is referred to an advisory committee of the National Academy of Sciences on request of either the petitioner or the Administrator. If an advisory committee is appointed, the committee has up to 90 days to report to the Administrator. (The report of the advisory committee is also kept confidential until publication of the regulation setting the tolerance or granting exemption.) After receiving the report, the Administrator has an additional 30 days in which to make his decision, on the basis of the report and any other information before him.

Within 30 days after publication of the regulation, any person adversely affected may file objections with the Administrator and request a public hearing. The report of the advisory committee is made part of the record of the hearing, and a member of the committee may be designated to testify at such hearing with respect to the committee report. The Administrator's final order of publication is based entirely on the evidence in the record of the hearing. When administrative review procedures have been exhausted, the final order is subject to judicial review in the same manner as orders affecting registration of pesticides under the FIFRA.[28]

Section 408 (e) of the FDCA has been the basis for the agency's continuing review of tolerance levels, in the light of new scientific findings. Section 408 provides that the Administrator may at any time, on his own initiative or on the petition of "any interested person," propose the issuance of a regulation establishing a tolerance or an exemption. Thirty days after publication of such "proposal" the Administrator may publish a regulation based on such proposal, unless the registrant or applicant for registration of the pesticide contests the regulation. The proposal is then submitted to an advisory committee and is subject to the same administrative and judicial review process applicable to the petitions for tolerance of would-be registrants under the FIFRA.[29] Section 408 (e) also has been successfully used by conservationist organizations to insure the responsiveness of the agency to their views.

In the May 1970 case of Environmental Defense Fund vs U.S. Department of Health, Education and Welfare, the United States Court of Appeals for the District of Columbia ordered the Secretary of HEW, to publish the Petitioner's proposal to establish a "zero tolerance" level for DDT residues on raw agricultural products, thus setting in motion a process of administrative review of tolerance levels for many uses of DDT.[30] This administrative review has not yet been completed.

Criteria for Setting the Tolerance

The determination of the safety of the tolerance has been described as "a scientific judgment" which "cannot be derived from any arbitrary mathematical calculation." This judgment involves consideration of information received from both the petition for tolerance and the agency's own research and surveillance program. Factors considered include the "no effects" levels demonstrated in the experimental animals, the cumulative potential, the metabolic data, the probability of exposure to other similar poisons, and the species differences applicable to translating the animal data into effects on man.[31]

The tolerance is set at a level that would protect the consumer even if all of the particular raw food crop for which the pesticide is intended carried residues at the tolerance level, even though surveillance and enforcement data show that only a small percentage of the samples actually do. However, the agency in setting a residue tolerance for the raw commodity does take into consideration the usual practices of food preparation and the patterns of consumption that result in reduction of residues in food processing.

The tolerance is intended to be the maximum (not the average) residue permitted on the crop when harvested and shipped, providing the directions for pesticide application have been followed.[32]

"Zero Tolerance"

Under the Food, Drug and Cosmetic Act, residue tolerances may be set at any level necessary to protect the public, including zero. In the past, however, when a pesticide was registered for use on a food crop on the basis of a zero tolerance or on a "no residue" basis, it meant that the directed use would not leave residues on the harvested food at levels detectable by chemical analysis. As the techniques of chemical analysis became more sensitive, it became apparent that small residues of pesticides remained. It then became necessary to decide whether these newly discovered residues were hazardous to public health.[33]

In 1965 the report of a committee of the National Academy of Sciences - National Research Council recommended that: "The concepts of 'no residue' and 'zero tolerance' as employed in the registration and regulations of pesticides are scientifically and administratively untenable and should be abandoned.[34]

After extensive consideration of the report, the Agricultural Research Service, then responsible for the Administration of the FIFRA, and the Food and Drug Administration, then responsible for Section 408 of the FDCA, agreed on a procedure for implementing the committee's recommendations. A joint U.S. Department of Agriculture-HEW statement for implementation of the NRC Pesticides Residues Committee's "Report on 'No Residue' and 'Zero Tolerance'" was published in the Federal Register on April 13, 1966. It was agreed that registrations of all uses involving reasonable expectation of small residues on food or feed at harvest, in the absence of a finite tolerance or exemption, should be discontinued as of December 31, 1967. An exception is made in cases where evidence has been presented to support a finite tolerance, or to show that enough progress has been made on the investigation to warrant the conclusion that the registration could be continued without undue hazard to the public health.[35] For various reasons, many registrants did not submit for tolerance for certain crops; as a result many uses were cancelled. Registration for other "zero tolerance" pesticides was continued on the basis of pending petitions for finite tolerances or on the basis of progress reports on ongoing studies.[36] Review of petitions to establish tolerances for these uses has been going on for the past few years. Not all of them have been completed.

Enforcement

The Food and Drug Administration.

Reorganization Plan No. 3 did not reassign to EPA the responsibility of the Food and Drug Administration (FDA) to endorce pesticide residue tolerance on raw agricultural commodities. FDA inspectors, operating out of 17 district offices, are responsible for sampling and examining raw food commodities for pesticide residues along with other food contaminants. These commodities include all food except meat, poultry, and broken egg products.

Some shipments of food are sampled because of suspected excess residues prior to shipment. Other, "objective," samples from packing-houses, trucks, railroad cars, and ultimate consignees are regularly collected and examined. In addition, field checks are made to see that growers are following label directions or other authoritative advice on pesticide use.[37]

If any residue in excess of tolerance is found in any shipment, the shipment is seized and procedures are initiated for voluntary recall of the rest of the lot. If necessary to prevent shipment of violative lots, the FDCA (unlike the FIFRA) provides that an injunction may be obtained. Criminal actions may be brought against persons or firms responsible for violation.[38]

The Consumer and Marketing Service.

Federal inspection for pesticide residues in meat and poultry in interstate and foreign commerce is the responsibility of the Consumer and Marketing Service (C&MS) of the Department of Agriculture.* C&MS enforces the residue tolerances set under the Food, Drug and Cosmetic Act as part of its general meat and poultry inspection programs.

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* On April 2 the Consumer and Marketing Services meat and poultry inspection programs were transferred to the Animal and Plant Health Inspection Service (APHIS). C + MS remains responsible for administering the Egg Products Inspection Act.

Under these programs, tissue samples are taken at the slaughterhouse level, and products found to be "adulterated" by excessive pesticide residues are administratively detained pending final disposition.[39] At this point, experience has shown that packers will generally voluntarily destroy contaminated lots and recall identifiable lots that have been shipped. Disposition of "suspected" meat or poultry may vary depending on degree of contamination (for example, some products may be brought within the residue tolerance by removing the fat), but no meat or poultry is released for sale if it contains excessive pesticide residues.[40] To further protect the consumer, the producer of a lot found to contain excessive residues is required to prove that subsequent animals are within tolerance requirements before slaughter is permitted.[41] If a suspected product has already been shipped, an action of seizure and condemnation may be brought in the United States District Courts and, if necessary, remedies of injunction and criminal penalties are also available. A final method available to the Secretary of Agriculture, in the case of felonious or repeated failures to destroy contaminated products, would be withdrawal (after hearing) of Federal inspection services, thus putting the offending packer out of business.[42]

The Federal Wholesome Meat Act of 1967 and the Wholesome Poultry Products Act of 1968 provide that the standards of Federal inspection will soon be provided for inspection of all slaughterhouses engaging in intrastate commerce. This may be done by the State with Federal cooperation or, where the States fail to act, by the Federal Government.[43] The Egg Products Inspection Act of 1970 provides a similar inspection program for broken egg products. [44]

FEDERAL TRADE COMMISSION ACT

Regulation of pesticides, under the Federal Insecticide, Fungicide and Rodenticide Act, frequently means that only the label directions of a pesticide that is dangerous or pollutive if misused are regulated. The pesticide itself remains available for any use the consumer chooses. For this reason, public and Governmental attention has been drawn to pesticide product advertisements that are inconsistent with the labeling and the adverse effects of such advertisements on Federal pesticide control efforts.

The Federal Trade Commission (FTC) is empowered by law to act in this area. Under the Federal Trade Commission Act, 15 USC 41-46, 47-58, the FTC is authorized to make trade regulation rules, identifying and prohibiting unfair methods of competition and unfair or deceptive acts or practices (in interstate commerce). After making such rules, the FTC has the power the enforce them by adjudicative procedures that can culminate in orders to cease and desist. Persons adversely affected by such cease and desist orders may, of course, obtain judicial review.

The FTC has been engaged in rule making proceedings concerning pesticide advertisements since January 1968. On three occasions, January 24, 1968, February 6, 1969 and August 11, 1970, the FTC has solicited the views and comments of the public regarding three progressively more stringent proposed rules.[45] However, it has not yet promulgated any rule.

The Commission's most recent revision of a proposed trade regulation rule would prohibit the dissemination of pesticide product advertisements that represent that:

(1) The product is safer than indicated in the labeling, or

(2) Fewer precautions are necessary in the preparations for use or use of the product than indicated in the labeling, or

(3) The possible consequences of use, such as drift, residue, soil retention, water pollution, damage to desirable plants, etc., would be less extensive or less deleterious than indicated in the labeling, or

(4) The effectiveness, or range of uses or applications are greater than indicated in the labeling.

In addition the second revision of a proposed trade regulation rule would prohibit all pesticide product advertisements that fail to clearly and conspicuously display the following warning statement:

> WARNING: THIS PRODUCT CAN BE INJURIOUS TO HEALTH: READ THE ENTIRE LABEL CAREFULLY AND USE ONLY AS DIRECTED."[46]

The FTC's power to make trade regulation rules is a discretionary power. The Commission's rules of practice require that the Commission must provide general notice of trade regulation rulemaking by publication in the Federal Register and other practicable means. Such notice must include an opportunity for interested persons to participate in the proceeding by submitting written data, views or agruments. In other respects the rule making proceeding may consist of whatever investigations, conferences or oral hearings (with opportunity for interested persons to testify) that the FTC considers necessary. Following such a proceeding, the FTC's rules of practice permit it to promul-

gate a trade regulation rule on the bases of all relevant information before it, but there is no requirement that the Commission make its decision within a set time period.[47]

THE FEDERAL AVIATION ACT

The authority of the Federal Aviation Administration (FAA) to prescribe controls on the aerial application of pesticides, the only example of direct Federal regulation of the use of pesticides, is based on the Federal Aviation Act of 1958. Section 307 of this Act authorizes the Secretary of Transportatio to prescribe air traffic regulations governing the flight of aircraft for (among other purposes) the protection of persons and property on the ground.[48]

Under this enabling authority, the FAA has established regulations requiring agricultural aircraft operators to obtain certificates when they are engaged in the spraying of economic poisons. Certification is awarded by the FAA only on showing by the applicant of adequate knowledge concerning:

(1) safe handling of economic poisons and proper disposal of used containers,

(2) the general effects of economic poisons on plants, animals and persons and the consequent precautions to be used and

(3) the primary symptoms of poisoning, appropriate emergency measures to be taken and location of poison control centers.[49]

In addition, Section 137.39 of the regulations state that no pilot may dispense any economic poison that is registered under the FIFRA:

(1) for a use other than that for which it is registered,

(2) contrary to any safety instructions or use limitations on its label, or

(3) in violation of any Federal law or regulation.

An exception to the above regulation is permitted in the case of aerial application of pesticides for experimental purposes under the supervision of a Federal or State agency authorized to conduct such experiment by law or permit from the U. S. Department of Agriculture.

Federal Water Pollution Control Act

Reorganization Plan No. 3 also transferred to EPA all the functions of the Federal Water Quality Administration of the Department of the Interior, under the Federal Water Pollution Control Act and its amendments, 33 USC 466 et seq. These functions include: subsidy of sewage treatment plant construction; assistance to State, local, and regional planning; pollution monitoring; research ;and demonstration projects; approval of State water quality standards for interstate **waters**; river basin and estuarine zone planning; abatement action through State-Federal Conferences and through enforcement of water quality standards; and other assignments. All these programs are now administered by the Water Quality Office of EPA.

The Water Quality Office is necessarily concerned with pesticide pollution of waters in all its programs. For example, the Lake Michigan Enforcement Conference of 1968 made recommendations which led to an interstate pesticide control agreement and the passage of State legislation.[50]

At present, however, the Water Quality Office is particularly concerned with the problem of integrating into its water quality standards program current scientific information on the dangers, persistence, and traveling propensity of pesticides in the aquatic environment.

In 1965 amendments to the Water Pollution Control Act called on the States to establish standards for their interstate waters which could then be approved, if sufficiently stringent, as Federal standards by the Secretary of the Interior. These standards include listings of the types of uses to be made of specific waters, the quality of water needed to support such uses (including specific limits on various types of pollutants), and specific plans for achieving quality levels.[51] The standards of all of the States have been approved with certain aspects specifically excepted in many cases. However, not all of the standards approved are considered adequate by the Water Quality Office, and there is a need to improve the knowledge of water quality characteristics so that standards can be upgraded. General criteria on pesticides, as well as other toxic substances, have been written into all of the approved water quality standards. But specific limits on pesticides in water have not been spelled out. Nor have definitive measures for implementing such limits been detailed.[52]

It should also be noted that present Federal law does not require effluent standards but only sets standards for the receiving waters. Nor does present Federal law require water quality standards for intrastate waters.

The 1970 Water Quality Improvement Act is the enabling legislation used for this study and for the other work of the Water Quality Office concerning standards for pesticides.

Section 5 (L) (2) of the Act of 1970 directs EPA to develop, and issue to the State for the purpose of adopting standards, the scientific knowledge necessary to develop water quality criteria for pesticides. Under this directive the agency has been involved in increased research on the effects of pesticides and on the search for less harmful pesticides, expanded monitoring and investigation to identify critical areas, and closer coordination with other Federal pesticide control programs.

Section 5 (L) (2) authorizes the Pesticide Control Study, which includes this report. This is described as "a study and investigation of methods to control the release of pesticides into the environment, which study shall include examination of the persistency of pesticides in the water environment and alternatives thereto," for "the purpose of assuring effective implementation of standards adopted pursuant to paragraph (2)."

HAZARDOUS MATERIALS TRANSPORTATION CONTROL LEGISLATION

The Department of Transportation (DOT) Act of 1966, united the former powers of three separate Federal agencies (The Interstate Commerce Commission, The Federal Aviation Agency and The Coast Guard) to separately regulate or enforce the regulation of the interstate shipment of hazardous materials.[55]

Transportation Standards for Poisonous Materials

The power to make rules governing (among other things) the container marking, packaging, preparation for shipment and handling in shipment of various kinds of hazardous materials is now being exercised by the Hazardous Material Regulations Board of DOT, composed of top level representatives of the DOT agencies responsible for the four mades of Transportation: The Coast Guard, Federal Aviation Administration, Federal Highway Administration and Federal Railway Administration.[56]

A number of pesticides are classified by the Hazardous Materials Regulation Board as Class B poisons,* the catagory of poisons that are either known to be so toxic to man as to present a human health hazard during transportation or are presumed to be toxic to man on the basis of experiments with laboratory animals.[57] Such poisons require appropriate labels on the outside of the package[58] as well as safe packaging.

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*With the exception of hydrogen cyanide, which is sometimes used as a fumigant, no pesticides are included in the category of Class A poisons, the most dangerous group of poisons with the most stringent packaging requirements. Class C poisons, which have the least stringent packaging requirements, are mainly tear gases.

The regulations dealing with the packaging of Class B pesticides are divided into specific packaging requirements for specifically named poisons (such as methyl parathion, aldrin and arsenical compounds) and general requirements for packaging of poisonous liquids or poisonous solids not otherwise specified.[59] The specifically named poisons are generally the more toxic ones and are therefore more restricted in their permitted packaging.[60]

Pesticides that are class A or B poisons may not be transported or stored in the same vehicles with food stuffs or animal feeds.[61]

Enforcement

Responsibility for regular inspection of hazardous materials transportation is exercised by the safety inspection field staffs of the four modal transportation authorities.[62] In all cases the carrier is required to report all poisoning incidents and releases of poisons that occur during the course of transportation.[63]

The shipper is responsible for informing the carrier in writing of the identity and poison classification of any pesticide that is classified as a hazardous material and plainly marking the outside of the package, and both the shipper and the carrier are responsible for compliance with various aspects of safety regulations governing the transportation of such pesticides.[64] Specifications are provided for poison containers except for small quantity exemptions. The container manufacturer's marking certifies that he has complied with the applicable container specifications. However the regulations do not directly penalize the container manufacturer for not meeting such specifications.[65]

Since the enabling legislation for regulation of hazardous materials transportation pre-dates the establishment of the Department of Transportation, penalties for violation of the regulations differ for different modes of transportation. In the case of shipments of poisons by motor vehicle or rail the only penalties provided by law for violations of transportation regulations are criminal penalties. Knowing violation of such regulations are punishable by a fine of up to $1,000 and/or imprisonment for up to one year, if death or bodily injury does not result. If an injury does result such violation is punishable by a fine of up to $10,000, up to ten years imprisonment, or both.[66] The same criminal penalties are provided for knowing violation of hazardous materials shipment regulations in air transportation.[67] However in the case of air transportation there is also provision for a civil fine of $1,000 that is subject to compromise. Where a civil penalty is imposed and the violation is attributable to the carrier, the aircraft is subject to lien for the penalty.[68] In the case of shipment by water, the law also provides a civil penalty of $2,000 for knowing violations of such regulations if no injury results, in which case, if the violation is by the carrier, the Government may proceed against the vessel for the penalty. If an injury does result from the violation, a criminal penalty of up to $10,000 and 10 years imprisonment is provided by law.[69]

There is no statutory provision for seizure of a violative cargo in any of the four modes of transportation. However, in the case of a water borne cargo at a port of entry into the United States, customs officials may insist that the vessel be detained pending compliance with hazardous materials or other transportation regulations before the cargo is removed from the ship.[70]

A frequent type of hazardous materials violation involving pesticides has been the situation where carriers have packed pesticides that were Class B poisons into the same vehicle with food cargoes. In some of these cases the Department of Justice has initiated criminal proceedings against the carriers. Carriers have often been prosecuted because they did not apply proper placards to vehicles carrying hazardous materials, and shippers have been prosecuted for failure to properly classify shipments on shipping documents furnished carriers.[71]

THE PUBLIC HEALTH SERVICE ACT

Reorganization Plan 3 also transferred to the Environmental Protection Agency the enabling authorities for certain public health oriented programs of pesticide related research, monitoring and manpower development that had previously been administered by the Public Health Service of the Department of Health, Education and Welfare.

Title III, Part A, of the Public Health Service Act of 1944 as amended, authorizes in-house, cooperative and contract studies "relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man".[72] Acting under this authority, the Division of Pesticide Community Studies, Office of Pesticides Programs, EPA conducts a series of community studies in many parts of the nation to assess the long-term effects of pesticides on human health and the environment and provide a clearer understanding of the benefit-versus-risk equation of pesticide use. Permanent community studies are presently being carried on in 14 states through contracts with State health departments and universities, and 15 additional States are being aided through smaller pesticide projects.

These community studies are concerned with measuring the acute and chronic exposure of people to pesticides from all sources including manufacturing, formulation, and application. They consider the movement of pesticides in the total community environment, and attempt to learn how much of the pesticide residue accumulated in people comes from food, water, and air.

Through bio-chemical and clinical tests, the studies follow the same group of people over a period of many years to determine any differences in the health of those with high exposure to pesticides as compared with the general population whose exposure is usually at low dosage levels.

Also under this authority, the EPA conducts a nationwide program to determine levels of pesticide residues in the general population and to identify trends of change in these levels. Such residue levels provide a means of estimating the total pesticide exposure experienced by the general population of the contiguous United States. Pesticide levels are also measured in the air in selected areas of the country where pesticides usage varies.[73]

Title III, Part B, of the Public Health Service Act provides authority for Federal cooperation with State and local health authorities for enforcement of health regulations, comprehensive State health planning, training of State and local health workers and grants for State health planning, services and related manpower training. In addition, Part B provides authority for Federal regulations (including pest control measures) necessary to prevent interstate transmission of disease.[74]

Proceeding under these authorities, the Division of Pesticide Community Studies provides technical training to State and local health departments and environmental agencies in such matters as residue testing methods and accident reporting. Field personnel, assigned to State health or environmental departments, work with State personnel to develop and improve comprehensive State pesticide programs for the protection of human health. Training courses for pesticide applicators, pesticide control officials and laboratory workers are offered to Federal, State, local and nongovernment personnel and are conducted in cooperation with State and local health departments and environmental agencies.[75]

National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA)[76] requires that every agency of the Federal Government incorporate a concern for the quality of the environment into its agency mission, and establishes the Council on Environmental Quality (CEQ) in the Executive Office of the President, to promote, assist, and monitor the achievement of this objective. This landmark statute, signed on January 1, 1970, has already had a significant effect on Federal efforts to control the release of pesticides into the environment.

Title I of the NEPA authorizes several environment-oriented responsibilities that apply to all Federal agencies. Its most important provision, Section 102 (2) (C), provides that all Federal agencies must include a detailed "environmental impact statement" in every recommendation concerning legislation or "other major actions" significantly affecting the quality of the environment. This statement must include: alternatives to the proposed action, unavoidable adverse environmental effects, the relationship between short-term and long-term effects, and any irreversible commitment of resources.

Before filing the final environmental impact statement, the responsible agency must obtain the comments of Federal agencies having pertinent jurisdiction or expertise, and of appropriate State and local environmental agencies. The impact statement and the comments are then made available to the Council on Environmental Quality, the President, and the public; they also accompany the proposal through the agency review processes.

Title II of the NEPA created the Council on Environmental Quality and empowers it to prepare an annual environmental quality report and to make recommendations to the President concerning programs, policies, and legislation. Title II also authorizes the CEQ to analyze conditions and trends in the quality of the environment, to appraise the effects of Federal programs and activities on environmental quality, and to develop and recommend national policies.

Executive Order 11514, issued by the Presdient on March 5, 1970, describes in greater detail the responsibilities, under the National Environmental Policy Act, of all Federal agencies and the responsibilities of the Council on Environmental Quality.

Executive Order 11514 directs all Federal agencies to monitor, evaluate, and control their existing activities and to develop new programs and measures to protect and enhance the quality of the environment in consultation with other

Federal, State, and Local agencies. The order further directs Federal agencies to make all information relating to environmental problems and control measures available to Federal, State and local agencies and other appropriate institutions. The order also directs Federal agencies to review their enabling authority and administrative policies and procedures to determine whether any are inconsistent with the purposes of the NEPA. The agencies were directed to submit reports on this review to the Council on Environmental Quality by September 1, 1970. The reports were required to include the corrective actions taken or porposed (including proposals for changes in enabling legislation).

Section 3 of Executive Order 11514 details the responsibilities of the Council on Environmental Quality under the NEPA. The CEQ is directed to seek resolution of significant environmental issues, where appropriate, by means of new programs and policies. It is also directed to coordinate Federal environmental programs, recommend priorities among Federal environmental programs, and promote the development of environmental research and monitoring.

The Council is also directed to issue guidelines to Federal agencies for the preparation of Section 102 (2) (C) environmental impact statements, and to issue other appropriate instructions to Federal agencies and requests for reports or information. Other provisions of the

Executive Order refer to the CEQ's role in international cooperation and its preparation of the annual environmental quality report.

The activities of the Council on Environmental Quality concerning coordination of Federal pesticide activities are carried out in cooperation with the Working Group on Pesticides, an interagency committee responsible to the CEQ. The activities of the Working Group will be discussed later in this chapter.

The other major activities of the Council relating to pesticides are "policy advice" and supervision of the Section 102 (2) (C) environmental impact statements.

Policy Advice

The CEQ is authorized by the NEPA to develop new environmental policies and recommend them to the President. As part of its policy advice function, the CEQ played a major part in creating the Environmental Protection Agency and in drafting Executive Order 11574 concerning administration of the Refuse Act.[77]

Also as part of its policy advice function, the

Council, in the summer of 1970, convened and led a legislative task force for the purpose of drawing up new enabling legislation for the pesticides registration program. The task force included representatives of the Departments of Agriculture; Health, Education and Welfare; and the Interior; and the Offices of Science and Technology, and of Management and Budget. The bill the task force drew up is based on the experience of Federal agencies with the operation of the Federal Insecticide, Fungicide and Rodenticide Act. recommendations of official study commissions, and the example of State pesticide regulation programs such as the California permit system.[78]

This bill was submitted by the President to Congress on February 8, 1971, as part of a comprehensive program of environmental legislation. It was introduced as HR 4152 and S 272, the proposed Federal Environmental Pesticide Control Act of 1971.

The administration bill is based on the FIFRA but contains some important differences. Most significantly, the bill is designed to control not only the directions for use on the pesticide label, but the actual use of the pesticide. Under the administration bill, all pesticides registered by EPA would be classified "for general use," "for restricted use," or "for use by permit only." Pesticides designated for restricted use (such as nonpersistent poisons which present short term dnagers to human beings) could be used only be trained applicators. Pesticides designated for use by permit only (such as less toxic but persistent poisons which build up in the food chain) would require approval of a trained consultant for each application. Applicators and consultants would be licensed by the States; the Federal Government would provide part of the funds to train them.

Other provisions of the bill include: authority to permit experimental registration of pesticides; streamlining the process of appeals from registration, cancellation, and suspension decisions of EPA; and authority for the Administrator to stop the sale of a pesticide if it violates the Act. Registration and inspection of establishments manufacturing or processing pesticides would be mandatory, and the Administrator would be authorized to regulate pesticide storage and disposal.

Effects of Environmental Impact Statements on Federal Pesticide Programs

Section 102 (2) (C) of the NEPA does not authorize the

Council on Environmental Quality to change government programs on the basis of environmental impact statements. However, the process of preparing environmental impact statements, which requires consideration of alternative actions, solicitations of advice from other Federal agencies with "expertise," and consultation with CEQ, has had an effect on the formulation of Federal pest contrcl programs.

The Department of Agriculture, for example, has made a number of adjustments in several of its pest control programs, in response to the requirements of the impact statement and the criticisms of proposed statements by other agencies. The Agricultural Research Service's* Fire Ant program (which is also the subject of a suit brought by the Environmental Defense Fund) has been adjusted to avoid application of Mirex in water areas where juvenile fish and shell fish may be adversely affected, and in heavily wooded areas where fire ants survive with difficulty because of natural enemies. The ARS!s japanese beatle "stow-away" control program at airports has eliminated the use of aldrin and dieldrin, limited the use of chlordane to cargo and loading areas, and substituted the less persistent malathion for other airport use. The Forest Service's State-Federal cooperative gypsy moth elimination programs have limited application of DDT to what the Forest

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* On October 31, 1971, the newly formed Animal and Plant Health Inspection Service took over the Agricultural Research Service's pest control programs. ARS is now purely a research agency.

Service and the cooperating State agencies consider to be the most highly valued forests.

Executive Order 11574: Administration of the Refuse Act Permit Program

Executive Order 11574 of December 23, 1970, initiated a new Federal program to control water pollution from industrial sources through use of the permit authority in the Refuse Act of 1899. This is intended to be a quicker and more efficient means for abatement of discharges from industrial plants (such as the endrin discharges that caused the 1963-64 Mississippi fish kills)[79] than the enforcement provisions of the Federal Water Pollution Control Act.

The Refuse Act outlaws discharges and deposits (other than municipal sewage) into all navigable waters, whether interstate or intrastate, except under a permit obtained from the Army Corps of Engineers and under any conditions attached by the Corps.[80] Until recently, this statute was interpreted to apply only to discharges obstructing the navigability of waters and was very little used. But court decisions in the late 1960's made it clear that the Act of

1899 can be used to regulate all kinds of discharges and that it applies equally to intentional, unintentional, and accidental discharges and spills.[81]

Knowing violation of the Refuse Act is a misdemeanor, subject to a $2,500 fine or 6 month imprisonment. Violators also are subject to civil suits for injunctive relief.

Executive Order 11574 makes a permit mandatory for all inudstrial discharges into navigable waters of the United States. The Secretary of the Army is responsible for administering the permit program, but he may not issue any permit unless the proposed action meets the requirements of the administrator of EPA concerning water quality standards.

This stipulation means that violators of Federal-State standards, State standards for intrastate waters, or standards imposed by EPA (when Federal-State or State standards do not apply or are clearly deficient) are not eligible for permit and are liable to enforcement.

The Corps of Engineers required all existing dischargers to file basic information on their discharges by July 1, 1971, with an October 1, 1971, deadline for certain information more detailed or difficult to obtain. In order to obtain a permit, an industrial discharger must disclose the effluent he intends to discharge, the outlets he will use, the amount of effluent, and how the discharge is to be monitored. The permittee must maintain records as to the nature and frequency of all discharges, permit inspections, and make periodic followup disclosures.[82]

There has been no moritorium on use of the Refuse Act to enforce water quality standards while the permit program is being initiated, and filing of a permit application does not preclude an enforcement action against a discharger. Indeed, since the issuance of Executive Order 11574, enforcement activity, including both criminal and civil actions, has continued to increase.

In July of 1970, for example, the Justice Department brought 10 civil actions against industrial concerns releasing mercury into navigable waters. (Mercury is used as a fungicide and as a slimicide, as well as in industrial processes.) Interim stipulations have been entered in 9 of the 10 cases; in the 10th case the plant was shut down. The stipulations and plant shutdown resulted in a total reduction in mercury discharged from these plants of from 139 to 2 pounds daily. Final disposition of these cases awaits EPA's review of the defendants' plans for further reductions in mercury discharges.[83]

Fish and Wildlife Act

Until the creation of the Environmental Protection Agency in December 1970, the Fish and Wildlife Service of the Department of the Interior was responsible for the protection of wildlife from the effects of pesticides. The remaining component of the Service, **The Bureau of Sports** Fisheries and Wildlife still bears a large portion of this responsibility.

Section 5 of the Fish and Wildlife Coordination Act of 1946 authorizes the Service to make investigations on the effects of polluting substances on wildlife, to distribute the results of such investigations to Federal, State, municipal, and private agencies, and to report and make recommendations to Congress.[84]

The Fish and Wildlife Act of 1956 authorizes the Secretary of the Interior to "take such steps as may be required for the development, management, conservation and protection of" fisheries and wildlife resources. The Act of 1956 also provides for continuing investigations and periodical reports to the public, the President, and Congress with respect to "the availability and abundance and the biological requirements" of the fish and wildlife resources.[85]

During the 1950's the Service undertook research projects under these authorities on the effects of pesticides on wildlife. However, concern over reports of serious effects on fish and bird populations, resulting from DDT spraying programs, led Congress to pass additional pesticide research legislation in 1958.[86]

Pesticide Research Act

The Pesticide Research Act of 1958 directed the Secretary of the Interior to "undertake comprehensive continuing studies on the effects of insecticides, herbicides, fungicides and pesticides, upon the fish and wildlife resources of the United States, for the purpose of determining the amounts, percentages, and formulations of such chemicals that are lethal to or injurious to fish and wildlife, and the amounts, percentages, mixtures, or formulations that can be used safely, and thereby prevent losses of fish and wildlife from such spraying, dusting, or other treatment."[87]

Prior to December 1970 the Act was administered by the Fish and Wildlife Service, which made use of it to develop a program of pesticides research at five major locations: Patuxent, Md.; Columbia, Mo.; Denver, Colo.; Gulf Breeze, Fla.; and Ann Arbor, Mich.[88] However, Reorganization Plan No. 3 transferred to EPA the authority of the Secretary of the Interior under the Pesticides Research Act, together with the Gulf Breeze Laboratory. The specific purpose of this transfer was to merge under one agency a program of testing for effects on wildlife, the pesticide registration function, (formerly conducted by the Department of Agriculture), and the food protection and public health effects research and monitoring functions (formerly performed by the Department of Health, Education and Welfare).

Reorganization Plan No. 3 did not completely divest the Department of the Interior of its authority to do research on the effects of pesticides on fish and wildlife. (The department still retains authority under the Fish and Wildlife Act.) The Department of the Interior retained four laboratories, which are still operated by the Bureau of Sport Fisheries and Wildlife.[89]

Executive Order 11507: Prevention Control and Abatement of Air and Water Pollution at Federal Facilities

Another federal policy statement applicable to abatement of pesticide pollution is Executive Order 11507 of February 4, 1970.

This directive envisions a three-year program to bring Federal installations into line with air and water quality standards. Heads of agencies responsible for Federal facilities are required to consult with EPA in identifying and dealing with air and water quality problems, and to develop and propose abatement procedures to the Office of Management and Budget. (The primary thrust of the Executive Order is, of course, not for control of the release of pesticides, but for construction of sewage treatment plants and incinerators.) As in the case of discharge permits under the Refuse Act, the Administrator of EPA is the authority for compliance with water (and also air) quality standards and may impose more stringent requirements than existing legal standards when existing standards are inadequate or inapplicable.

Section 4 (a) (4) of the Executive Order specifically provides that all Federal facilities shall be operated and maintained so that the use, storage, and handling of potentially pollutive materials, including "chemical agents," will prevent or minimize the possibilities for water and air pollution. Where appropriate, preventive measures are required to entrap spillage or discharge; appropriate emergency procedures for dealing with accidental pollution are also required.

STATE LAWS AND INSTITUTIONAL MECHANISMS

State pesticide laws have typically been divided into two categories: (1) those which regulate the distribution and sale of pesticides, and (2) those which regulate the use and application of pesticides (see Appendix I). Recent legislation tends to combine these categories of regulatory activity,[90] however, the distinction holds for most States. To better understand the points at which control is applied, it is useful to visualize the participants in the production, distribution, and consumption of pesticides (see Fig. 1).

Distribution and Sale

Currently 49 States have statutues requiring the registrat and labeling of economic poisons as a condition for the lawful sale and distribution of these materials in intrastate commerce With few exceptions the States have followed substantially the Uniform State, Insecticide, Fungicide, and Rodenticide Act deve oped under the auspices of the Council of State Governments.[92] The Uniform Act closely follows the FIFRA.[93] In the interest o

Channels of Pesticides Distribution in the United States

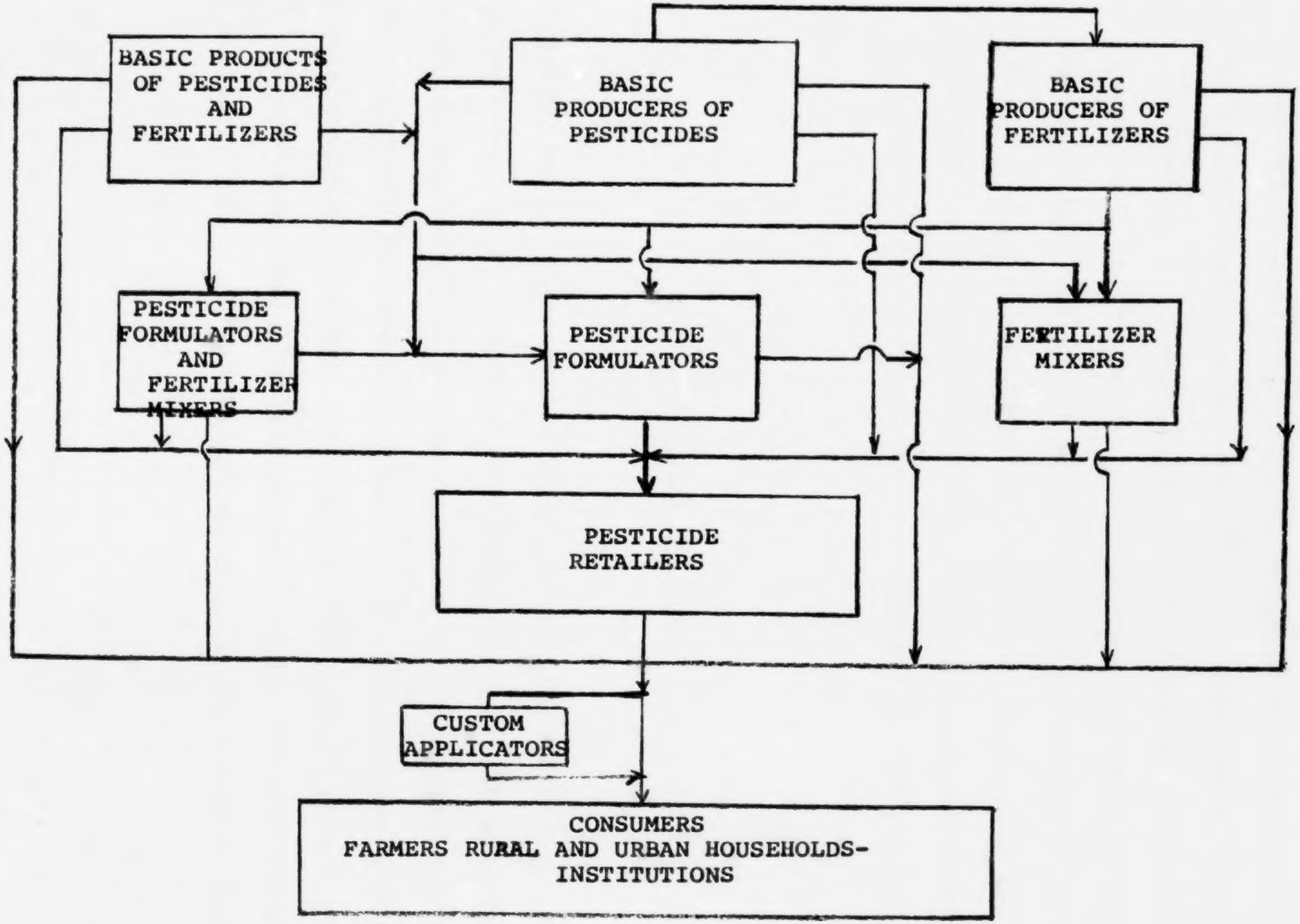
BASIC PRODUCTS OF PESTICIDES AND FERTILIZERS
BASIC PRODUCERS OF PESTICIDES
BASIC PRODUCERS OF FERTILIZERS
PESTICIDE FORMULATORS AND FERTILIZER MIXERS
PESTICIDE FORMULATORS
FERTILIZER MIXERS
PESTICIDE RETAILERS
CUSTOM APPLICATORS
CONSUMERS
FARMERS RURAL AND URBAN HOUSEHOLDS-
INSTITUTIONS

FIGURE I.

uniformity between the States and with Federal Government, the Act authorizes the adoption of regulations in conformity with standards prescribed under the FIFRA.[94] In practice, Federal requirements regarding ingredient statements, safety coloring, and labeling are widely followed by the States. In some States, products which bear the Federal registration number and appropriate labeling are exempt from State registration requirements.[95] Generally, ppoducts marketed solely intrastate must be registered with the appropriate State official.[96]

While most States follow the requirements of the Uniform Act, an increasing number have established controls over the distribution and sale of pesticides that go considerably beyond the Uniform Act, particularly with respect to those pesticides for which use restrictions have been established. A survey by the State Department of Agriculture in Minnesota shows that by May 1971, at least 29 States had taken some action to restrict the use of some pesticides (See Appendix II)

There is considerable variability among the States both as to the scope of the use restrictions and the method used to establish restrictions. A summary of the major pesticides restricted appears in Table (page 56)

The scope of use restrictions ranges from very restrictive (for example, no use is permitted for DDT or Endrin in Wisconsin) to restrictions of limited application.

Table 1.--Summary of State Restricted Use Pesticides, May 1971*

Pesticide	Number of States restricting use
DDT	19
DDD	16
Dieldrin	15
Endrin	12
Heptachlor	15
Lindane	15
Aldrin	15
Chlordane	9
Toxaphene	8
Thailium sulfate	9
Compound 1080	10
Phosphorus paste	5
Alkyl mercuries	5

* **See Appendix II**, pp. 2-4. Information supplied by Dr. Rollin M. Dennistoun, Administrative Supervisor, Minnesota Department of Agriculture.

In the latter category the restrictions may apply to specific crops, -- for example, DDT on tobacco in Kentucky and dieldrin and heptachlor on hay and forage crops in Utah; or to specific areas, -- for example, all chlorinated hydrocarbons by aerial applicators in one county in Idaho, and the use of 2, 4-D H.V. esters in all of four counties and part of one county in Iowa.[97]

The Minnesota survey revealed that use restrictions were imposed by legislation in 8 States, by regulation in 21 States, and by administrative order in 4 States.[98]

There has been a recent trend toward amending State pesticide laws to establish a special "restricted use pesticide" category, for which greater restrictions are imposed on both the sale and distribution, and the use and application. Currently, at least 17 States have legislation providing for such separate treatment.[99] The definition of "restricted use pesticides" varies among the States but, in general, includes pesticides which the regulating agency determines are hazardous to man or other forms of life, or to the environment other than the target pest.[100]

One form of control over the sale and distribution of pesticides is the pesticide dealer license or permit. In the Minnesota survey, 9 States restricting pesticide use required dealer permits or licenses.[101] More recent legislative changes have included this requirement. Currently an additional 10 States authorize or require such licenses or permits.[102] Although a few States specify that the applicant for a license or permit may be examined to determine his qualifications,[103] most legislation is not specific on this point. A major argument for requiring some demonstration of knowledge of proper pesticide use and a familiarity with pesticide laws is based on the proposition that a majority of users receive their information regarding proper application from dealers.[104] As a minimum, licensing requirements provide a record of those businesses dealing in pesticides, may provide improved data on sales, and may establish a mechanism for administering a system of user permits. A few States also license pesticide manufacturers.[105]

A second form of control over the sale and distribution of pesticides is the use permit. Since the use permit generally poses a condition on sale and distribution, it will be discussed briefly here, as well as in the subsequent section dealing with use and application legislation. In the Missesota survey, 16 States reported that permits were required for the use of some pesticides.[106] Subsequent legislative changes authorize use permits in at least 4 other States.[107] While not specifically authorizing permits, at least 5 additional States have broad statutory language authorizing either regulations, restrictions, or conditions on the sale, distribution, or use of pesticides generally, or of restricted use pesticides **specifically.**[108]

In addition to those actions taken by the States to restrict pesticide use, a few States have banned the use of certain pesticides. (A ban differs from cancellation of registration.) The Minnesota survey shown that 5 States unqualifiedly "ban" the use of at least one pesticide.[109] The ban is imposed by legislation in 2 States, by administrative order in 2 States, and by regulation in 1 State.[110]

Those States which have recently amended or enacted new pesticide registration legislation have generally extended coverage to include regulations and restrictions to assure the safe handling, transportation, storage, display, distribution, and disposal of pesticides and pesticide containers.[111] These activities are also frequently covered by laws on pesticide use and application.

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State Departments of Agriculture. However, there has been an increasing trend toward establishing pesticide review or control boards or committees by statute. These groups, representing a broader spectrum of interests, have been given authority with respect to public decisionmaking relating to State pesticide legislation and policy.[112] Currently, 32 States have some organization of this type. While these groups usually serve in an advisory capacity, in at least 12 States they have been given some regulatory authority.[113]

To complement the pesticide law, most States have enacted a Hazardous Substances Act, corresponding to the Federal Hazardous Substances Act[114] requiring registration, labeling, and antidote information for household poisons and substances not covered within the statutory definition of economic poisons.[115] By 1970, 30 States had enacted statutes of this type.[116] In addition, at least 9 States have passed livestock remedy laws[117] which may affect the sale and distribution of certain pesticides; for example, systemic insecticides given orally to livestock, and preparations used in eradicating parasites in or on animals.[118]

States have also acted to deal with the problem of pesticide residues on agricultural commodities sold within the State. At least 18 States have legislation similar to the Federal Food, Drug and Cosmetic Act, and usually have provisions regarding tolerances that follow substantially the Miller Amendment to the Federal Act.[119]

Use and Application

There is less uniformity among State laws affecting pesticide use and application than is found in those dealing with sale and distribution. These State laws have no Federal counterpart.[120] While a Model Act was prepared by the Association of American Pesticide Control Officials and was published by the Council of State Governments in 1951,[121] it has not been as widely followed as the Uniform Act for pesticide registration. The Model Act dealing with pesticide use and application has been **substantially** revised, and a draft appears in the Council of State Government's suggested State legislation in 1971.[122]

Pesticide use and application laws generally fall into three categories: (1) those which regulate or control the business of applying pesticides, (2) those which regulate professions relating to pesticide application, and (3) those which restrict or prohibit the use of pesticides.[123] These laws have been summarized in Table 2. Specific citations to those general laws dealing with pesticide application appear in Appendix I.

Thirty-one States have statutes requiring the licensing of commercial or custom pesticide applicators.(Table 2). Typically, these laws apply to those persons or businesses engaged in agricultural pesticide application. In some

Table 2

Summary of State Pesticide Use and Application Laws, 1971

	General Pesticide Application Law* Licenses and/or Permits		Separate Structural Pest Control, Tree Surgeon, or Related Professions Law(s)	Other Law Affecting Application
	Custom Applicators	Others+		
1. Alabama			x a/	
2. Alaska	x	x		
3. Arizona	x	x	x b/	
4. Arkansas	x		x a/	x 1/
5. California	x	x	x b/	
6. Colorado	x	x	x b/	
7. Connecticut	x		x c/	x 2/
8. Delaware				
9. Florida	x	x	x a/	
10. Georgia			x b/	
11. Hawaii				x 1/
12. Idaho	x			x 3/
13. Illinois	x	x	x c/	x 3/
14. Indiana		x		
15. Iowa	x			
16. Kansas	x		x a/	
17. Kentucky			x a/	
18. Louisiana	x		x a,b/	
19. Maine	x	x	x c/	x 2,4/
20. Maryland	x	x		
21. Massachusetts	x	x		x 2/
22. Michigan	x			x 3/
23. Minnesota	x	x	x b/	
24. Mississippi			x a/	x 4/
25. Missouri				

	General Pesticide Application Law* Licenses and/or Permits		Separate Structural Pest Control, Tree Surgeon, or Related Professions Law(s)
	Custom Applicators	Others+	
26. Montana	x	x	
27. Nebraska			
28. Nevada	x		
29. New Hampshire	x	x	x c/
30. New Jersey			
31. New Mexico	x	x	x b/
32. New York	x	x	
33. North Carolina			x 1/
34. North Dakota			
35. Ohio	x	x	
36. Oklahoma	x		x b,c/
37. Oregon	x		
38. Pennsylvania			
39. Rhode Island	x	x	
40. South Carolina			x b/
41. South Dakota	x		
42. Tennessee	x		
43. Texas			
44. Utah	x		
45. Vermont	x	x	
46. Virginia			
47. Washington	x	x	
48. West Virginia			
49. Wisconsin		x	
50. Wyoming			

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broad

- May be sufficient in some States to cover structural pest control.
- Includes permits required under separate legislation, e.g., economic poisons law. "Permit" is narrowly construed to include express authority in most cases. A number of additional States establish broad authority to regulate, restrict, or condition use. See text discussion. Separate herbicide legislation appears in "Other"

a/ Broad coverage of these professions.
b/ Structural pest control law.
c/ Tree surgeon law.

1/ Authorizes or requires use permit for use of certain herbicides under specified conditions.
2/ Requires permit or license for use of pesticide in State waters.
3/ Authorizes the designation of areas where pesticide use may be restricted or prohibited.
4/ Requires license, permit, or registration for crop dusting or aerial application.

cases the coverage is broad enough to cover structural pest control,[124] for example; but 10 States have separate legislation for licensing custom applicators and structural pest control operators. In a number of other States, structural pest control is specifically exempted from licensing under the customer applicator statute.[125] Of those States having no general custom applicator statute, 6 have either a broad professional licensing statute or a structural pest control statute.

Usually, the custom applicator law applies to both aerial and ground operations. In addition to the 31 States having a general pesticide application or custom applicator law, 3 States have laws requiring licenses or permits for aerial applicators only.[126] A fourth requires annual registration of all aerial applicators and the keeping of records regarding each application.[127]

The type of materials covered under the general pesticide application statutes is generally as broad as that covered under the registration statutes. That is, most statutes cover insecticides, fungicides, herbicides, and rodenticides. Herbicides have frequently been singled out for special restrictions. Eleven States have special statutes that either authorize or require use permits for herbicides under certain conditions, or authorize the designation of areas where herbicides, and in some cases other pesticides, may be restricted or prohibited.[128] Of those States having legislation specifically restricting herbicides, 3 are States with no general pesticide application statute **(Table 2)**.

The applicant for a license to engage in the business of applying pesticides is usually required by statute to demonstrate that he is qualified, but the factors for determining qualifications are usually established by the administering agency.[129] In a number of States a written examination is required.[130] Others specify minimum age, educational, and experience requirements.[131] Some provide that the licensee may be restricted to the use of certain types of material and equipment.[132] Special classifications of licenses based on type of activity (for example, agricultural as distinguished from horticultural) are authorized in a few States.[133] Licensing distinctions are also made in some laws between employees or operators and managers.[134]

The Association of American Pesticide Control Officials' Model Act contains an optional provision for the licensing of "pest control consultants" as a category, in addition to commercial pesticide operators and managers. The consultant is a person who supplies tehcnical advice, supervision, or recommendations regarding the use of specific pesticides for a fee. At least 1 State currently provides specifically for licensing these persons.[135]

Most States have a specific legislative requirement that the applicant show proof of financial responsibility in the form of a security bond, liability insurance, or the deposit of money.[136] Licensing fees are universally required and are usually nominal.

In addition to its jurisdiction over licensing, the State administering agency is generally given broad authority to issue rules and regulations to carry out the purposes of the pesticide use and application act.[137] Thus, in many instances the wording of the statute may not be particularly informative as to the action required by licensees, or the conditions imposed on the issuance of license.138 The **authority of** the agency may specifically extend to restrict the use of pesticides, to inspect and in some cases license equipment, and to require the keeping of records on use.[139] A number of statutes dealing with pesticide use and application buttress the force of the labeling requirement under the pesticide registration statute by providing that pesticides must be used in accordance with labeling instructions.[140] Evidence to the contrary may be grounds for denial, suspension, or revocation of license.

In more recent years, attention has focused on the specific problems associated with the transportation, storage, and disposal of pesticides and pesticide containers. With respect to transportation, intrastate shipments of pesticides could be made subject to regulations under the State legislation that corresponds to Federal law dealing with the transportation of hazardous materials, administered by Federal Hazardous Materials Regulations Boards.[141] In the past, States have not acted under this authority to deal with pesticide shipments.[142] Some States have amended their pesticide laws to authorize regulation of pesticide transportation under either the registration laws or under the use and application laws.[143]

As states have acted to ban or substantially restrict a number of pesticides, the problem of pesticide disposal has become particularly acute. The revised Model Use and Application Act makes the discarding and storing of pesticides and pesticide containers subject to regulation and most States have provisions either explicitly or impliedly authorizing regulation of this area.[144] The problem has also been regualted by State law controlling waste disposal sites.[145]

A survey conducted by the National Association of State Departments of Agriculture, and reported in Proceedings of ... National Working Conference on Pesticide Disposal, indicates that very little official action had been taken by July 1, 1970 with respect to the collection and disposal of pesticides.[146] Six States reported having taken some action to collect unused pesticides;[147] and 7 States indicated they had official guidelines or recommendations.[148]

Provisions for enforcement of pesticide use and application laws may include authority to subpoena witnesses and records in hearings, to inspect property, and to investigate complaints of injury or losses resulting from pesticide use.[149] Violation of the law is usually a misdemeanor subject to fine or imprisonment, in addition to the suspension of the permit or license.[150] Several States also provide injunctive relief.[151]

A major weakness of pesticide use and application laws has been that two major categories of users have generally been exempt from control: (1) public employees, and (2) farmers not engaged in the business of applying pesticides.[152] A few States have passed legislation to specifically provide for the licensing or qualifying of public employees,[153] and farm use is now being controlled by legislation requiring use permits.[154]

Twenty States have general legislation **authorizing** use permits for pesticides **(Table 2)**. Five States also have specific legislation authorizing use permits for herbicides, and at least 4 States have statutes requiring permits or licenses for using pesticides in State waters (Table 2). Thus, over half of the States have legislation expressly or impliedly authorizing use permits for non-commercial users of some pesticides.

The conditions under which use permits are to be required have usually been left for determination by the agency administering the pesticide law. Under most pesticide legislation the administering agency is given broad authority to adopt rules and regulations relating to materials and methods of pesticide application, including authority to restrict or prohibit use in particular areas and during specified periods of time.[155] In "permit" States, the statute usually provides, in addition, that the administering agency may adopt a list of pesticides for "restricted use" for the State or for designated areas, and may require that they be used only under permit.[156] A few States require that the permit be issued only under circumstances where no satisfactory pesticide substitute is available.[157] Failure to demonstrate sufficient knowledge and experience concerning proper use may be grounds for refusal of a permit.[158]

Pest Control

In addition to laws controlling pesticides, a substantial number of States have special legislation dealing with the control of pests. While pest control legislation generally does not deal explicitly with pesticide use, it may have an effect on pesticide use. For example, legislation authorizing public action to deal effectively with pest outbreaks may in the long run reduce the total amount of pesticides needed to control a given pest problem. Of course, all levels of government engage in substantial pest control activity under their general powers and authority. The following discussion will focus on two special types of legislatively created State pest control organizations: (1) the interstate compact, and (2) special purpose districts.

A Model Enabling Act for an interstate compact for pest control was developed and published by The Council of State Governments in 1965. The Compact attempts to provide for the extraterritorial considerations that are necessary in dealing with pest control among the States. For example, a given pest in State A may not pose a substantial threat to any agricultural crop in State A but its spread to State B might be an agricultural catastrophe. It may be difficult for State A to justify taking the measures necessary to control the pest, particularly if there is no assurance that companion measures will be taken in other States and unilateral effort is of doubtful benefit. The Federal Government has an emergency fund to deal with pest outbreaks of more than local significance but the proponents of the Compact considered the funding inadequate.[159]

The Compact would create a pest control insurance fund among ratifying States. The fund would be established by appropriation from member States and such other gifts, grants, and donations as other public and private groups would be willing to contribute. The contribution required of member States would be based on an equal sharing of one-tenth of the total budget with the remainder shared in proportions based on the value of agricultural and forest crops and products produced in the party States.

Under the Compact, any party State could apply for assistance under the insurance fund for pest control or eradication activities it wishes to have undertaken or accelerated in another party State and in limited circumstances in non-party States. Upon adequate demonstration that the pest constitutes a threat to the applying State, the insurance fund would provide financial support and require that the necessary action be taken in the States where the pest is located. Party States would be expected to maintain their normal pre-Compact pest control activities. All 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands are potential parties. Currently at least 14 States have passed legislation reaifying the Compact.[160]

The special purpose district is a second type of institutional device for pest control. About half the

States now have legislation authorizing the organization of some type of pest control district (Table 3). Districts are usually local entities organized under authority delegated by a State enabling act. Functionally, districts for mosquito control and weed control are the most prevalent.

The district may operate as a substantially autonomous unit of local government organized specifically for some type of pest control,[161] or pest control may be an authorized activity of a multi-purpose autonomous district.[162] Another approach is to authorize pest control districts as a method for financing the service in a limited area by property taxation.[163] Such entities are subordinate agencies of the county or other local, general purpose government. In some instances separate taxing power is not authorized.[164] In a few instances the district may be related to a State agency.[165]

Although the special district has probably been of limited importance in terms of total national pest control, its status might change under some alternative strategy of pest management. For example, a program of integrated pest control measures would require coordinated group action and might involve the exercise of powers available to government but not to individuals.

Table 3

Pest Control Districts in United States, 1967*

State	Type of District[1/]
Arizona	Pest control districts (1) Antinoxious weed districts
Arkansas	Mosquito abatement districts (0)
California	Community service districts (132) Pest control districts (68)
Colorado	Pest control districts
Florida	Mosquito control districts (20)
Idaho	Mosquito abatement districts
Illinois	Mosquito abatement districts (19)
Kentucky	County mosquito control districts (0)
Louisiana	Mosquito abatement districts (1)
Minnesota	Metropolitan mosquito control district
Montana	Mosquito control districts Weed control and weed-extermination districts
Nebraska	Mosquito abatement districts (0) Weed control authorities Pest eradication districts
Nevada	Mosquito abatement districts (1) Weed control districts
New Jersey	County mosquito extermination commissions
New Mexico	Grasshopper control districts Noxious weed control districts
New York	County mosquito-extermination commissions
North Carolina	Mosquito control districts (1)
Oklahoma	County bindweed control districts
Oregon	Chemicals control districts (2) Grasshopper control districts (0) Mosquito control districts Special rodent control districts Weed control districts
Texas	Noxious weed control districts (2) Mosquito control districts
Utah	County service areas (6) Mosquito abatement districts (9) Predatory animal control districts
Virginia	Mosquito control districts
Washington	Mosquito control districts (3) Agricultural pest districts Intercounty weed districts Weed districts
Wyoming	Predatory animal districts (22) Rodent and magpie control districts Weed and pest control districts

* Prepared from Individual-State Descriptions, Governmental Organization, 1967 Census of Governments, Vol. 1, pp. 297-456.

[1/] The numbers in parentheses indicate how many districts of varying kinds were reported in the 1967 Census of Governments as meeting the criteria for separate government entities. Those having no numbers were considered as agencies of some other government unit and were not enumerated for Census purposes.

INTERNATIONAL LAW AND INSTITUTIONAL MECHANISMS

International Pesticide Control Activities of the United States - Programs of the Agency for International Development

International development programs, such as those supported by the U. S. Agency for International Development (AID) or the World Bank, have primarily emphasized economic benefits. AID recognizes that nations subject to food shortages or epidemics of pest-borne diseases may be more willing to accept the ecological risk attendant on the use of persistent or highly toxic pesticides than nations without such problems.

However, a number of considerations have recently caused AID to change its policies and to adopt new guidelines for the distribution of pesticides abroad under the U. S. Foreign Assistance Program. These considerations include:

1. The adoption of limits for pesticide residues by

many food importing countries and the growing tendency toward worldwide limitation of pesticide residues exemplified by the program of the Codex Alimentarius Commission. (An international body established in 1962.)

2. The findings of recent studies that in several cases the application of nonselective, persistent pesticides has destroyed normal biological controls, leading to increases of other insect populations and further use of pesticides to destroy new pests.

For these reasons, as well as awareness of accidents due to mishandling of pesticides and worldwide losses of wildlife due to cumulative buildup of certain persistent pesticides in the food chain, AID distributed new instructions concerning "Procurement and Use of AID-Financed Pesticides," effective February 12, 1971.[166]

AID Manual Circular 1612.10.3 provides the AID Missions must evaluate carefully every proposed use of pesticides and consider available alternatives. Technical personnel in Missions shall contribute to decisions on selection, procurement, and use of pesticides and in overall planning of pest control programs. Pesticide procurement procedures are required to evaluate both the capability of the country to use the materials efficiently and safely, and the level of awareness of country officials about potential hazards.

In addition, AID Mission personnel must make sure that, where Codex or specific country pesticide residue limits have been established, such limits are considered before a given pesticide is used on a crop which is or may be destined for export. Mission personnel may suggest to officials of the cooperating government that they establish communications with food safety law administrators in each market area to ascertain current pesticide regulations and restrictions.

AID Mission officials in Health, Food and Agriculture, and Rural Development are directed to encourage food exporting countries to acquire technical competence in chemical residues analysis, if they do not have it. Such officials are directed to urge cooperating countries to consider establishing laboratories or joining with neighboring governments in developing regional facilities in which pesticide residues may be tested.

The instruction also informs AID Missions that AID/Washington is now prepared to give them a limited amount of assistance regarding various technical aspects of pesticides and the economics of pesticide use. Such assistance is available from a number of U. S. universities under AID contract on projects related to pesticides, and also from the U. S. Department of Agriculture (USDA) under an agreement between AID and USDA.

In addition, Mission personnel are informed that AID/Washington will provide immediate "backstopping" and technical assistance to Missions in pest and disease problem identification and in the procurement and usage of pesticides. The assistance contemplated includes problem-specific surveys on pest problems, short-term training programs, workshops, and seminars. In addition, a panel of experts on pesticides is being established to provide advice and guidance across the broad spectrum of pesticide problems. The instruction states also that AID/Washington is in the immediate process of mobilizing the resources needed for an integrated pesticide program and alternative pest management programs and is using a group of U. S. institutions and individuals with outstanding scientific capability to do this. The same panel of experts is now in the process of updating Manual Circular 1612.10.3. In addition, AID is preparing to publish a Pesticide Educational Manual which will serve as a complete guide for ordering, handling, using, monitoring and labeling of pesticides. The new manual will include health and first aid measures, and detailed product and container specifications for approximately 50 pesticides and formulation.*

* Information supplied by Dr. W. H. Gorman and Madison Broadnax U.S. AID.

Pesticide Control Activities of International Organizations

Joint FAO/WHO Food Standards Program--the Codex Alimentarius

The Codex Alimentarius Commission was established in 1962 by the governing bodies of the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). The Commission is an international body engaged in the development of international wholesome food standards, including pesticide residue tolerances. The objective of the Commission is both to safeguard consumer interests and to facilitate world trade. At the present time, 88 countries including the United States are participating in its work.

The actual work of collecting basic information and drafting proposed standards is carried out through committees and subcommittees. The committees are organized either on a commodity basis (such as milk and milk products, sugars, fats, and oils) or on a subject matter basis (such as food additives, food hygiene, food labeling, and pesticide residues).[167]

Codex Committee on Pesticide Residues and FAO/WHO Joint Meeting of Expert Committees

The Codex Committee on Pesticide Residues was created in 1966.[168] The responsibility of this committee, the Codex Commission's Procedural Manual states, is "to propose international tolerances for pesticide residues in specific foods." A further responsibility is the preparation of a list of priorities of those pesticide residues found in food commodities entering international trade, for toxicological evaluation by the WHO Expert Committee on Pesticide Residues and examination by the FAO Working Party of Experts on Pesticide Residues.[169]

In practice, this has meant that the principal responsibility of the Codex Committee on Pesticide Residue has been to plan and review, with an eye to world trade needs, the work of the two international committees whose findings are the basis of proposed international residue tolerances.[170]

The FAO and WHO Expert Committees were both engaged in studies to evaluate the hazards of pesticide residues in food before the Codex Committee on Pesticide Residues was created. Since 1966 the Expert Committees have met jointly every year. The purpose of the joint meeting is to review relevant data on certain pesticides and their residues and to establish, where possible, man's acceptable daily intake (ADI)* of such pesticides. On the basis of the ADIs, the Joint Committee makes recommendations to the Codex Committee on Pesticides concerning residue tolerances and practical residue limits.** The recommended ADIs, residue tolerances, and practical residue limits are published annually; although they have no legal status, they command a great deal of respectful attention from the scientific community and from government agencies with environmental and public health responsibilities.[172]

The Codex Committee on Pesticide Residues may decide to reject the Joint Expert Committee's recommended tolerances, and return them to the Joint Expert Committee with adverse comments or for additional information. Or the Committee may tentatively adopt the recommended tolerances and submit them to the members nations and associate members of FAO and WHO for comment. After reviewing such comment and perhaps amending the recommended tolerances, the Committee may submit them to the Codex Commission. If adopted by the Codex Commission, a tolerance becomes a provisional standard; it is then published in the Codex Alimentarius as an international food standard.[173]

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* The ADI of a chemical is the maximum daily amount that can be taken during an entire lifetime without appreciable risk to health.

** A practical residue limit is the maximum unintentional residue allowed in a specified food for which no tolerance has been established[171].

Full acceptance of a Codex international residue tolerance means that the country concerned must change its own legal or administrative provisions relating to food standards to conform with it. In the case of the United States, the Environmental Protection Agency is required to change its own residue tolerance set under the Food, Drug and Cosmetic Act. There also is provision for target acceptance, in which the country concerned indicates its intention to accept the standard after a stated number of years, and also for acceptance with minor deviations.[174]

At present the only tolerances published in the Codex Alimentarius are for hydrogen cyanide, inorganic bromide and malathion in raw cereals and flour. All of the above are fully accepted by the United States. In addition, the Codex Commission has recommended for acceptance the tolerances for diphenyl on citrus fruit; heptachlor on a number of raw fruits, dried fruits, and herbs; and both piperonyl butoxide and pyrethrins on raw cereals, fruits for canning, oil seeds, nuts, and dried fruits and vegetables.[175]

As of November 1970, the joint FAO/WHO meetings have recommended residue tolerances and/or practical residue limits for uses on various commodities of 57 pesticides, including most of the controversial ones.[176]

FAO Guidelines for Legislation Concerning the Registration for Sale and Marketing of Pesticides

Another international committee of experts, the Working Party of Experts on Official Control of Pesticides, was established in 1963 by the Director General of the Food and Agriculture Organization of the UN. The Working Party was directed to develop advice concerning registration and approval schemes for official control of pesticides. Accordingly, two sessions of the Working Party were held in September of 1965 and in March-April of 1966. During these sessions, the provisions of existing pesticide control laws in 25 countries were reviewed. The Working Party prepared a report which included recommendations of model provisions for incorporation in the comprehensive pesticide legislation of all countries.

These provisions, in the form of guidelines, were reviewed by interested national and international organizations and with representatives of the World Health Organization and the International Labour Office. It was decided that the provisions would be concerned with regulating the safe and effective use of pesticides for marketing and sale, and would specifically exclude regulations concerning safety and health in the manufacture and use of pesticides. The Guidelines were published jointly by the FAO and WHO in 1969.[177]

Although written in language that can be adjusted to fit different kinds of government organizations and administrative procedures, the Guidelines constitute an approximation of a model national or State pesticide registration act. In providing for applications for registration (accompanied by proofs of safety and efficacy), labeling requirements, advisory committees, cancellation and suspension of registration, and appeals from all decisions of the "Registrar," the Guidelines are basically similar to the Federal Insecticide Fungicide and Rodenticide Act. There are a number of very significant differences, however. Six significant provisions of the Guidelines are not included in the FIFRA:

1. The Guidelines provide that the Registrar may, after considering the evidence submitted in support of an application for registration, decide instead to issue a provisional permit. A provisional permit would entail use of the pesticide for a shorter period of time than the registration period, and under stipulated conditions, for the purpose of obtaining information needed before granting a registration. The stipulated conditions may include safety and health precautions, periods of use, methods of application, and other matters.[178]

2. Administrative regulations under legislation based on the Guidelines may contain special provisions with respect to pesticide substances or operations considered to present a high degree of hazard to human health or the environment. Such regulations may specifically include: restriction of the sale of such substances to insure their use by authorized organizations or persons only, conditions for field evaluation of experimental compounds, and provisions necessary to safeguard third parties, the environment and wildlife.[179]

3. The Registrar has authority to regulate pesticide packaging and labeling.[180]

4. The label must contain instructions for safe disposal of used containers.[181]

5. The sale or distribution of a pesticide is unlawful if the pesticide has decomposed or deteriorated so as to be ineffective or dangerous, or if it is packaged in containers which have deteriorated or have been damaged so as to be potentially dangerous in storage or use.[182]

6. False or misleading advertising of any pesticide, or advertising that is not justified by the conditions of registration, is unlawful.[183]

The Administration's proposed bill, the Federal Environmental Pesticide Act,[184] includes provisions similar to or intended to accomplish the same purpose as all of these provisions of the Guidelines.

International Labour Office-World Health Organization Committee of Occupational Health

The Sixth Session of the Joint ILO-WHO Committee on Occupational Health, which met in June 1968, undertook the task of providing international communication among medical and scientific experts concerning control of occupational exposure to airborne toxic substances, including pesticides. The purpose of the Committee was to develop recommendations for the guidance of all nations concerning methodology for determining permissable limits for exposure to such substances and, where possible to develop definite limits for exposure to specific substances.[185]

The Committee published a survey of legislation and practices concerning maximum allowable airborne concentrations of a great number of chemicals in the work environment (including many pesticides) in 31 countries.[186]* However, it recommended for international.adoption the maximum allowable airborne concentrations for only 24 chemicals. Only one of these, parathion, is a pesticide.[187]

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* The U. S. has no Federal law concerning occupational exposure to toxic substances. However, "threshold limit values" drawn up by the U. S. Department of Labor for Federal supply contracts under the Walsh-Healy Public Contract Act, recommendations of the American Conference of Governmental Industrial Hygienists, and State standards are published in the Joint ILO-WHO Committee's report.

The Committee has made a number of other recommendations, if adopted, they would lead to a better understanding of the biological response of workers exposed to toxic substances, and greater uniformity among nations of standards for worker protection against exposure to toxic substances.[188]

Organization for Economic Cooperation and Development

The Organization for Economic Cooperation and Development (OECD) is an economic advisory organization composed of 23 industrialized non-Communist bloc nations including Australia, Canada, Japan, Turkey, the United States and 18 European countries. Between 1966 and 1969, three meetings of OECD subgroups expressed concern regarding the presence of residues of persistant organochloride pesticides in the environment, and the organization undertook three small-scale, cooperative, international monitoring programs involving pesticide residues in wildlife. The second study program, begun and completed in 1969, also included PCB residues; the third study program (1969-71) included PCB and mercury.[189]

In May 1970, OECD created an Environment Committee for the purpose of developing governmental interest in maintaining or promoting an acceptable human environment in the framework of government policies for economic growth. The Environment Committee is charged to relate environmental policies to economic growth policies, with emphasis on the economic and trade implications of environmental policies, and to propose concerted solutions to problems that have substantial international implications.[190]

The December 1970 report of the (third) Study Group on Unintended Occurrence of Pesticides recommended to the new Environment Committee that it establish a sector policy group on pesticides and related chemicals. The proposed sector group would maintain review of national approaches to pesticides control and use, and assume responsibility for continuing the wildlife sampling and analysis program set up by the three study groups. It would be authorized to identify those chemicals that cause environmental problems, and to propose the national work needed to make possible a comparison of the benefits obtained versus the risks incurred in using these compounds (including the cost of switching to other pest control methods). The report recommended that the proposed sector groups would then be authorized to recommend, for the guidance of member countries, administrative, organizational or legislative steps that would be necessary to apply the results of its studies.[191]

As a result of the above recommendations, the Sector Group on the Unintended Occurrence of Chemicals in the Environment was created in May of 1971. In its first year of operation, the new sector group has concerned itself with studies of the unintended occurrence of PCB, mercury, and cadmium.[192] Neither PCB nor cadmium are pesticides. Although mercury is both a fungicide and a slimicide, its use in the chlorakali industry is considered to be responsible for the most damaging leakage of mercury into the environment.

The Environment Committee also developed an "early warning" procedure regarding changes in national law controlling substances that affect the environment in member countries. This procedure, which applies to new measures affecting therapeutic drugs, food additives, and chemical pollutants as well as pesticides, was adopted by OECD in May of 1971 for a period of two years.

The early warning procedure will allow members of OECD to receive prior notification of pending changes in protective measures in cases where measures taken in one country are likely to have significant effects on the economy and trade of other countries. It further provides the opportunity for a consultation and discussion between member countries as to the technical justification for these measures in order to advance mutual understanding, whether or not agreements between member countries can be negotiated. The procedure is not intended to foreclose immediate action if urgently needed.193/

Since OECD adopted the early warning system, the United States has twice given notice of fact-finding inquiries conducted by the Environmental Protection Agency as early warnings of possible action by the EPA to cancel the registration of pesticide uses. The pesticides involved are chlordane, heptachlor, arsenic, and lead compounds.194/

Activities of European Regional Organizations Related to Pesticide Control

European and Mediterranean Plant Protection Organization

EPPO is a coordinating organization of the national plant protection agencies of practically all European countries and some countries in the Mediterranean area outside Europe. EPPO collects and disseminates information on quarantine measures, phytosanitary regulations for import and export of plants and plant materials, regulation and use of pesticides, and promotion of alternative methods for pest control. It also makes proposals for research.195/

Council of Europe

The Council of Europe, an organization of non-Communist bloc, European countries concerned with political (as opposed to economic) questions, operates with a Consultative Assembly and a Committee of Ministers. In addition, seven member countries have a special arrangement within the Council, the so called "Partial Agreement." All three of these entities are involved in activities affecting pesticide control.

(1) The Committee of Agriculture of the Consultative Assembly has prepared a report on the Use of Pesticides in Agriculture, recommending the strengthening and reorganization of the Council's expert committees so that their work can be directed at better control of highly toxic or persistant pesticides.

(2) The Committee of Ministers has established the European Committee for the Conservation of Nature and Natural Resources to advise it on environmental matters. An ad hoc group on pesticides of this committee has recently completed a "Comparative Study of Legislation of Member States Relating to the Control of the Production, Marketing and Use of Agricultural Pesticides." The Committee of Ministers has adopted a resolution on the need for complementary legislative control of pesticides in order to protect the environment as well as human health.

(3) Two subcommittees of Partial Agreement expert committees have also made proposals concerning pesticide control. The Subcommittee on Poisonous Substances in Agriculture, in the Public Health Committee, has drawn up guidelines for manufacturers on data to be provided when.registering new pesticides and recommendations for safety labeling and is preparing a draft resolution on the classification of formulated pes-

ticides. The Subcommittee on Industrial Safety and Health publishes a "Yellowbook" containing a listing of dangerous chemical substances (including a number of pesticides) and proposals concerning their labeling.[196]

The European Economic Community

The European Economic Community (EEC), more popularly known as the Common Market, has undertaken to harmonize legislation in member countries with respect to:

1 Registration and marketing of plant protection products. A working group of the Commission, with the assistance of several expert committees, is drafting guidelines for consideration by EEC.

2 Tolerances for pesticide residues in food and feed. Proposals for regulations concerning the establishment of tolerances for about 50 pesticide residue tolerances in fresh fruit and vegetables are under discussion. Two other draft regulations concerning residue tolerances in other groups of food stuffs are under preparation by working groups; one group has been given the further task of developing methods of sampling and analysis for the purpose of detecting excess residues.[197]

INTERAGENCY AND INTRAAGENCY PESTICIDE CONTROL MECHANISMS

Interdepartmental Agreements on Registration of Pesticides, 1964-70

Until December of 1970, interdepartmental agreement was the principal government device for bringing environmental protection concerns to bear on the pesticide registration process (apart from the policy of the USDA to withhold registration from uses of pesticides on food crops whenever the Food and Drug Administration refused to grant a residue tolerance or exemption from tolerance.) The first interdepartmental agreement had its origin in the 1963 report of the President's Science Advisory Committee (PSAC). The PSAC report concluded that the provisions of the Federal Insecticide, Fungicide & Rodenticide Act and of the Food, Drug & Cosmetic Act were more effective in insuring the efficacy of pesticides than in their safety. The committee recommended therefore (among other things) that "the Secretaries of Agriculture, Interior, and Health, Education and Welfare review and define their roles in the registration of pesticides that are not present on food, but that may impinge on fish and wildlife or come into intimate contact with the public." [198]

In 1964, the three Secretaries signed an agreement defining the respective duties of the three departments concerning registration of pesticides and setting of tolerances for pesticide residues. The Department of the Interior was to be responsible for wildlife protection. The Public Health Service of the Department of HEW was to be responsible for protection of human health, and the Food and Drug Administration, of the same department, was to be responsible for pesticide residue on foods. The Department of Agriculture was to be responsible for safe and effective use of pesticides, including registration.

Each department agreed to keep the others informed of developments in knowledge on this subject, resulting from its research. The USDA agreed to furnish the other two departments with weekly lists of all proposals affecting registration for interdepartmental review, and the Department of HEW agreed to furnish the other two departments with weekly lists of all proposals affecting residue tolerances for the same purpose.

The agreement provided that objections to a proposed action concerning registration or tolerance setting should be expressed in writing and supported by appropriate scientific evidence. On being notified of an objection, the originating department was required to take initiative to work out a basis for agreement; in the event agreement was not reached within two weeks, the matter was to be referred to the Secretary of the department responsible for final action.[199]

The report of a 1965 task force of the National Academy of Sciences and the 1969 hearings of a subcommittee of the House Committee on Government Operations reveal that the 1st Interdepartmental Agreement did not succeed in resolving significant differences of opinion between the Departments of Agriculture and HEW. By 1969, the Public Health Service in HEW had objected on public safety grounds to the registration and reregistration of several controversial products, which the Agricultural Research Service (USDA) had proceeded to register over Public Health Service objections and without submitting any disputes for resolution to the Secretary of Agriculture. The position of the Agricultural Research Service was that the objections of the Public Health Service were not supported by scientific evidence, as required by the Interdepartmental Agreement, but were merely offered as a matter of professional judgement.[200]

In late 1969, both the Eleventh Report of the House Committee on Government Operations and the report of the HEW Secretary's Commission on Pesticides and Their Relationship to Environmental Health found fault with the provision that the department's objections to registration must be supported by scientific evidence. Both reports recommended that the Interdepartmental Agreement should put the burden of proof on the manufacturer of a pesticide to demonstrate the product's harmlessness to the objecting department.[201]

This recommendation was embodied in the new Interdepartmental Agreement signed in March 1970. The 1970 Agreement provided that the department objecting to a registration would only be obliged to state the reasons for its objection. The manufacturer would then be required to submit proof of the harmlessness of his product. If the USDA and the department which raised the objection continued to disagree after review of the manufacturer's data, either department could request review by a specially appointed panel of the three departments and, if still unsatisfied, by the Cabinet Committee on Environmental Quality.[202]

Since December 1970, the Interdepartmental Agreement has been unnecessary because all of the units that participated in the Agreement have been taken into the Environmental Protection Agency and are working under the supervision of the Pesticides Office. However, they are largely the same units, operating under the same enabling legislation.

The Federal Environmental Pesticide Act, proposed by the Administration, attempts to remove any remaining grounds for disagreement over the relative standing in registration disputes between manufacturers or others seeking registration of a product, and public officials charged with responsibility to protect public health or the environment. The FIFRA only seeks to assure that pesticides be effective and safe if used according to directions. But the proposed Act would incorporate into the registration process, as its most important concern, the responsibility to prevent long-term and short-term adverse effects on public health and the environment.[203]

The Working Group on Pesticides is composed of eight member agencies: Interior; Agriculture; Health, Education and Welfare; Defense; Transportation; State; Commerce; and the Environmental Protection Agency. Also represented are four observer offices: the Council on Environmental Quality, the Office of Management and Budget, the office of Science and Technology, and the Office of Intergovernmental Relations.

This central interagency coordinating body, which met for the first time in February of 1970, is the successor of two previous interagency groups with somewhat narrower scope of responsibility and membership--the Federal Pest Control Review Board, 1961-64, and the Federal Committee on Pest Control, 1964-69.

Activities of the Working Group and especially those of its five panels are conducted by representatives of over 30 Federal agencies and Offices of the President, as well as State, international, private industry and university interests.

Many of the specific responsibilities of the Working Group are first acted on by the five panels (largely composed of technical specialists); they are then reviewed and finally decided on by the Working Group itself. The five panels are:

1. Program Review. This panel makes the initial annual review of the proposed pesticide use programs of all Federal agencies that have such programs, as well as emergency reviews during the pesticide application season.

2. Safety. This panel is concerned with storage, packaging and transportation of pesticides and disposal of containers and waste.

3. Research. This panel's objective is to review and coordinate the numerous Federal efforts on pest control and pesticide research and to determine needed research.

4. Monitoring. This panel promotes a minimum

national pesticide monitoring program, encourages development and use of uniform sampling and analytical methodology, and works toward effective dissemination of monitoring results.

5. Information. This panel works to enhance public awareness of pesticide benefits and hazards through programs of public education, reviews agency programs of information on education in pest control; and provides a forum for prior coordination of press information.

The charter of the Working Group provides that it shall have two purposes: (1) To provide day-to-day coordination of Federal agencies' pesticide activities, and (2) to develop program and policy proposals.

The activities the Working Group is directed to coordinate include:

1. Pest control programs in which there is active participation on the part of the Federal Government, either in funding or in supervision;

2. Research on pests and their control, and the effects of control procedures, whether by chemical or other (biological) means;

3. Monitoring of the environment for pesticides and their residues through the National Pesticide Monitoring Programs;

4. Establishment of teams to conduct special investigations of pesticide problems that arise or may be anticipated;

5. Public information on pest control and the use of pesticides; and

6. Evaluation of economic and social values and risks involved in the control of pests by various methods.[204]

In the area of program and policy proposals, the Working Group has proposed a national policy and objectives that have been accepted by the Group's member departments and CEQ.

The national policy statement notes that the policy is based on a study of national monitoring data and the overwhelming weight of concerned scientific opinion, and declares:

"1. The use of restricted pesticides (italics supplied) shall be sharply controlled on an individual basis, to retain only those uses essential to human health or other essential uses for which there are not satisfactory alternatives. Current evidence indicates that there are situations where even restricted pesticides may be used without harm or danger of further environmental contamination. While in other areas, such as aquatic environments, the use of the same pesticide should be prohibited.

"2. The use of restricted pesticides shall depend on justification by competent authority. (italics supplied) The justification is to include the evidence that persistence, hazard and effectiveness have been considered, that the application will be made by personnel technically trained to apply it safely and that necessary precautions have been taken to protect man and the environment."

The policy statement also calls for actions by the Working Group to implement the policy. Such actions include: classification of pesticides to be restricted;

designation of competent authority for Federal use of pesticides; development of training objectives and standards for certification of advisors and applicators of restricted use pesticide; development of government-industry standards for pesticide containers, their reuse, and disposal; review of Federal restricted use pesticide programs; provision of review mechanism criteria to State and local governments when requested; and monitoring and research to determine where and how restricted pesticides can and cannot be used.[205]

The Working Group has already embarked on several of the policy's implementing actions. It has appointed an ad hoc task group to develop categories of restricted pesticides. It has also appointed a national training panel of experts to advise on the development of training objectives and standards, in preparation for the proposal of a comprehensive national training program.

The Working Group also cosponsored, together with the Department of Agriculture, a national working conference on pesticide disposal, and developed, through its panels, two reference documents on disposal. It has made these two documents and its Summary of Interim Guidelines for the Disposal of Surplus or Waste Pesticides and Pesticide

Containers available to States, local governments, industry, and the public.

A task group is devising an interdepartmental coordinated system of pesticide accident investigators, using as its core the National Multiagency Oil and Hazardous Materials Pollution Contingency Plan.

The day-to-day- coordination activities of the Working Group have been numerous. Among the most significant in 1970 was the review, at the request of the Secretary of the Interior, of the Interior Department's use of sodium monofluroacetate, a highly toxic compound used to reduce animal predator populations. Similarly, the Department of Helath, Education and Welfare asked for and received advice from the Working Group that formed the basis **for its position** on certain aspects of pesticide levels in water. The Council on Environmental Quality consulted the Working Group on the problem of criteria for evaluating the adequacy of research data in applications for the registration of herbicides in aquatic sites.

In addition, the Working Group has also undertaken the coordination of appropriate actions with States. Through the Council of State Governments, representative States participated in the review and modification of the national policy on pesticides. A summary of the National Pesticide Monitoring Program was distributed to 50 States by the Council of State Governments. The Working Group's programs of categorization of restricted pesticides and of training objectives and standards are receiving active participation and input by representatives of States.[206]

The Secretary's Pesticide Advisory Committee
of the
Department of Health, Education and Welfare

The Secretary's Pesticide Advisory Committee (SPAC) was established in February of 1970 in response to Recommendation No. 6 of the December 1969, Report of the Secretary's Commission on Pesticides and their Relationship to Environmental Health. Its purpose was to provide the Department of HEW, and other Federal agencies on request, with the opinions and recommendations of independent scientific experts on the hazards of pesticides to human health and environmental quality, on a continuing basis. When Reorganization Plan No. 3 became effective, the committee was made to report to the Environmental Protection Agency. In February of 1971, its concerns were broadened to include all hazardous materials, and it became the EPA Hazardous Materials Advisory Committee.[207]

The original SPAC consisted of six scientist consultants from outside the Federal Government. In addition, 31 short-term consultants served the Committee for variable periods of time.

During its year of operation, the SPAC undertook a number of important assignments:

1. Reviewed the problem of DDT in fish, and made recommendations to the Commissioner of Food and Drugs regarding acceptable levels of DDT residues in fish.

2. Developed a concept for a national facility to be used for testing the long-term health effects of

chemicals (with particular reference to tumorgenicity).

3. Led an interdepartmental team in a thorough review of the public health effects of mercury in the environment and prepared a report which has since been published in the March 1971 issue of the international scientific journal "Environmental Research."

4. Recommended a program for the development of demonstration incinerators or other procedures for the disposal of waste pesticides.

5. Suggested an in-depth review of the use and effects of toxaphene and closely related compounds.

6. Consulted regularly with HEW representatives of the Working Group and on the Interagency Agreement on Registration of Pesticides.

7. Consulted with FDA on several matters concerning residue tolerances on food. These include: reduction of tolerances for DDT on crops following cancellations of corresponding

registrations, establishment of tolerances (or exemptions from tolerance) for polyhedral viruses for the control of certain insect pests, and the development of incentives to industry to expedite actions on tolerance petitions.

SPAC also worked closely with the in-house Departmental Pesticide Coordinating-Committee on a number of special problems. Among the most significant projects were: review of the National Policy on Use of Pesticides, proposed by the Working Group; review of a guideline for DDT contents of effluents from processing plants, proposed by the Federal Water Quality Administration; review of a proposed policy on use of selected pesticides in water and on watersheds, proposed by HEW's Bureau of Water Hygiene; and investigation of a system developed by California for maintaining records on each applicaition of a pesticide. In addition, SPAC, together with the Departmental Pesticide Coordinating Committee, made a continuing review of progress being made in cancellations of registrations of such pesticides as DDT, DDD, other chlorinated hydrocarbons, DDVP vaporizers, and mercurial seed treatments, and particularly and the cancellation of registrations of zero tolerance pesticides.[208]

Hazardous Materials Advisory Committee
# of the
Environmental Protection Agency

The Hazardous Materials Advisory Committee (HMAC) in the Office of the Assistant Administrator for Research and Monitoring is the successor body to the Pesticide Advisory Committee of EPA and the Secretary's Pesticide Advisory Committee of HEW.

Like its predecessors, HMAC is composed of non-government experts in the environmental sciences, but its charter states that concerned private individuals whose competence is not limited solely to technical analysis may also be included in its membership. All members are appointed by the Administrator of EPA. The Committee itself is scheduled to terminate in February of 1973, unless the Administrator authorizes its extension.

The Committee's function is to provide expert, independent advice on issues related to the use of all hazardous materials in the environment. This advice should include: recommendations concenrning needed research and monitoring activities, assessments of specific research efforts, identification of emerging environmental problems related to hazardous materials, advice regarding EPA relationships to other agencies concerned with hazardous materials, and other recommendations concerning control policies.[209]

Some of the representative current activities of HMAC are the following:

1. Continued participation in development of policies for the National Center for Toxicological Research.

2. Development of advice on EPA policy and guidelines for pest control in food-handling activities.

3. Review of the current status of the use of the pesticide toxaphene and its environmental and health effects.

4. Review of standards for efficacy of labels for disinfectants and sanitizing agents.

5. Review of the status of nitrates, nitrites and nitrosamines in the environment.[210]

Joint Weed Committee

Weed Committees were formally established in the Department of Agriculture and the Department of the Interior, in 1950, when modern organic herbicides first came into general use. The Committees have met jointly since their formation, for the purpose fo establishing policy and exchanging weed control information between agencies concerned with land and water management and those agencies having responsibility for week control research, farmer education, and regulation of herbicide use.[211]

Much of the work of the Joint Weed Committee is done through its subcommittees:

Subcommittee on the Biological Control of Weeds

This Subcommittee, formed in 1958, advises agencies of the two Departments on matters pertaining to the introduction of biological agents (chiefly insects or disease organisms) for control of weeds. The subcommittee reviews the adequacy of testing done to establish the specificity of effects of biological control agents on weeds and their safety for other plants and animals. It makes recommendations on whether or not the organisms should be introduced for the control of weeds. The Subcommittee cooperates informally with the Canadian Department of Agriculture and several States that have biological weed control programs It identifies and attempts to resolve possible conflicts of interest that may arise over the control of a particular weed by biological means.[212]

Ad Hoc Interagency Committee on Use of Herbicides in Aquatic Sites

This subcommittee was set up by the Joint Weed Committee in 1966. Its purpose was to determine how the control of weed growth by Federal agencies responsible for managing and developing water resources, could be reconciled with the missions of other Federal agencies responsible for protecting water quality, wildlife, and public health. A special issue involved the need to insure the continued availability of effective, safe, and properly registered herbicides for use by Federal agencies in and around water,

The original participants in the work of the Ad Hoc

Committee included representatives of the Agricultural Research Service; several land and water management agencies of the Department of the Interior including its Fish and Wildlife Service, the former Federal Water Pollution Control Administration, and the U. S. Geological Service; the FDA; the Public Health Service; the TVA; the Corps of Engineers; and the Office of Science and Technology. Representatives from the National Agricultural Chemicals Association and from individual chemical companies occasionally participated. Representatives from the EPA and the Working Group on Pesticides have since become participants.

In addition to exchange of information, identification of research needs and proposals concerning requirements for registration of aquatic herbicides, the Ad Hoc Committee has attempted to obtain registration of selected herbicides such as 2,4-D and Silvex, for use by Federal agencies in water weed control programs. The Ad Hoc Committee has also made recommendations to EPA concerning tolerances or standards for herbicide residues in drinking or other water.[213]

Interagency Ad Hoc Committee on Preventitive Weed Control

The Preventive Weed Control Subcommittee was set up in

1967 to (1) evaluate the adequacy of state and Federal legislative authority to (a) prevent the importation of weeds and their propagation parts, (b) regulate the domestic movements **of weeds** and (c) quarantine and eradicate weed infestations; and (2) recommend research, education, and regulatory programs and other ways and means of increasing the effectiveness of **preventive** methods of weed control. The subcommittee identified serious weaknesses in preventive weed control programs at the Federal and State levels that needed to be corrected by new legislation. These deficiencies were: inadequate State regulations on weeds and weed control; inadequate control of noxious weeds in Federal lands; lack of **authority** to regulate the importation and interstate movement of new exotic and noxious weeds; and need to modify the Federal Seed Act to lower quantities of weed seeds permitted in farm seeds.

The subcommittee has advocated adoption by the States of the Model State Noxious Weed Law and also amendment of the Federal Seed Act to lower the quantities of noxious weed seeds permitted in farm, lawn, and garden seeds. Its most important activity has been the development of a proposed Federal Noxious Weed Law that is currently under consideration in the Department of Agriculture.[214]

The purpose of the Federal Noxious Weed Law is to prevent the introduction and spread within the United States of noxious weeds that are "new to or not heretofore widely prevalent or distributed within and throughout the United States."

The proposed legislation would give the Secretary of Agriculture authority to seize and dispose of new weeds which have a potentiality of becoming a menace to agriculture, public health, or water resources, while such weeds are moving into or through the United States and to take actions to promptly eradicate or control any such weeds that do become established in the environment. The proposed legislation would permit the use of selective herbicides for control or eradication of newly introduced weeds. However, it is believed that by concentrating on prevention and prompt action on new weeds the proposed law would have the effect of significantly reducing the volume of herbicides that would otherwise be introduced into the environment, and would avoid an added economic burden on farmers and others who would have to control these new weeds once they became disseminated.[215]

Department of Interior's Intradepartmental Pesticides Working Committee

The Department of the Interior's Intradepartmental Pesticides Working Committee is led by the representative of the Bureau of Sport Fisheries and Wildlife (BSFW) and includes representatives of the Office of the Secretary, Office of the Science Advisor, Bureau of Indian Affairs, Bureau of Reclamation, Bureau of Land Management, U.S. Geological Survey, National Park Service, Office of the Territories, and Bonneville Power Administration. Other agencies, such as the Alaska Power Administration, the Defense Electric Power Administration, the Southeastern Power Administration, and the Southwestern Power Administration, participate when matters of concern to them are being decided.

At the beginning of every year, each agency of the department submits its proposed pesticide use program to the BSFW's Chairman of the Working Committee. The Chairman, the Working Committee's staff and the representative of the agency concerned review each program together and make necessary changes. The representative of the Geological Survey is consulted if the program involves any water pollution problem. If the program does not involve any matters of concern to other land and water management agencies of the Department, it is submitted to the Program review Panel of the Interdepartmental Working Group on Pesticides. If any program involves a problem of interest to other agencies, the entire committee meets and resolves it, before sending it on to the Working Group.[216]

It should be noted that the standards of the Interior Intradepartmental Committee are very strict. The Interior

Department issued its own policy on pesticide use by the Department on June 12, 1970. This policy states that the Department considers safety and environmental quality as the primary determinant of pesticide use, and that it will conform with every restriction of Federal or State law. The policy statement also contains a prohibited list of 16 pesticide compounds* that can never be used in the Department's programs. This list includes several pesticides that were and still are being legally shipped in interstate commerce under the FIFRA. The policy statement also contains a restricted list of pesticides which can be used only in programs approved by the Interdepartmental Working Group on Pesticides.** This list is reviewed on an annual basis and modified as needed.

The policy states that chemicals on the restricted list can be used only when nonchemical techniques have been considered and found inadequate and that use of such chemicals can be restricted to small scale applications. Use of any chemical pesticide must be aimed at a specific pest problem, and involves minimum strength and frequency of application.[217]

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* PROHIBITED LIST - aldrin, amitrol, arsenical compounds (inorganic), Azodrin, Bidrin, DDT, DDD (TDE), 2,4,5-T, dieldrin, endrin, heptachlor, lindane, mercurial compounds, strobane, thallium sulfate, toxaphene.

* RESTRICTED LIST - acrolein, aldicarb (Temik), Aramite, arsenical compounds (organic), azinphosmethyl (Guthion) and homologs, Benomyl, BHC (benzene hexachloride), captan, carbaryl (Sevin), carbophenothion compounds, demeton *Systox), dicamba (Banvel D), dinitrocresols, dioxathion (Delanav), diquat, disulfoton (Disyston), Dursban, Dyfonate, endosulfan (Thiodan), endothall, EPN, ethion (Nialate), fenac, fenthion (Baytex), folpet (Phaltan), Furadan, Kepone (Outdoor uses), Matacil, Meta-Systox, methyl bromide, mevinphos (Phosdrin), Mirex, paraquat, phosmet (Imidan) (Prolate), phosphamidon, picloram (Tordon), sodium monofluoracetate (1080), TCMTB (Busan 72), TEPP (Tetron), trichlorofon (Dylox, Diptrex), Zectran.

Armed Forces Pest Control Board

The Armed Forces Pest Control Board represents all units in the Department of Defense (DOD) that are concerned with the development of the operational, logistical, and research policies of military pest control programs. The Board serves as a coordinating center for the military services on all matters of pest control, and between the Department of Defense and other government departments and agencies with related pest control programs. For instance, the Board coordinates DOD quarantine Programs with those of the Department of Agriculture and the Public Health Service.

The Board also serves as a consultant body to the three military departments on technical aspects of the prevention of arthropod borne diseases (malaria and typhus, for example) and the control of arthropod and rodent vectors and reservoirs of disease. The Board also serves as a consultant on the prevention of damage to property and materials by insects, rodents, birds and other pests on military aircraft, ships, and other vehicles for which quarantine regulations are established. It also recommends policy relating to domestic and overseas pest control activities.[218]

For the last few years one of the major concerns of the Board has been environmental pollution, specifically the unwarranted or excess use of pesticides and the disposal of excess pesticides. In line with the policies of the interdepartmental Working Group on Pesticides, which has given its approval to all DOD programs conducted at bases within the United States, the Board has changed many of its chemical recommendations for pest control, recommended stricter controls on many pesticides, and recommended the deletion of several formulations from the stock catalog.[219]

An instruction prepared by the Board and issued by the DOD in July 1970 for pest control operations at military installations shows concern for achieving the desired level of pest control while precluding environmental contamination by pesticides. Instruction 4150.7 provides that all military pest control planning and programming shall be directed by "professional" personnel and that control operations shall provide for supervision, execution, and evaluation of all measures for the safe and efficient control of pests, including preventitive measures. All operational pest control personnel shall be given training in effective, environmentally protective methods of pest control and in safe storage and handling of pesticides, and certificates of competence shall be issued to such trained personnel. All pest control operations shall be performed only by or under the direct supervision of trained and certified personnel. In addition, Instruction No. 4150.7 provides for protective clothing and gear for operational personnel, facilities for safe storage and mixing of pesticides and decontamination of personnel, special use vehicles, locked storage facilities, and other appropriate measures required to safeguard pesticides and prevent accidental poisonings.

FOOTNOTES

1/ 7 USC 135a

2/ 7 USC 135b (a) (b) (c)

3/ U.S. Department of Agriculture - U.S. Department of Health, Education & Welfare, The Regulation of Pesticides in the United States, March 1968, p. 2, 6, 7,

4/ 7 USC 135a

5/ 21 CFR 362.6

6/ 7 USC 135 a

7/ 21 CFR 362.9, 116

8/ USDA - U.S. Department of HEW, op. cit. p. 23

9/ 7 USC 135 d, e, f

10/ 7 USC 135c

11/ U.S. House of Representatives, Committee on Government Operations, 11th report of, "Deficiencies in Administration of Federal Insecticide, Fungicide, and Rodenticide Act," 91st Cong. 1st Sess. 1969, p. 4.

12/ 7 USC 135 b, c

13/ 7 USC 135c

14/ 7 USC 135c, d

15/ U.S. Senate, Subcom. on Agricultural Research & General Legislation of the Committee on Agriculture & Forestry, "Federal Environmental Pesticide Control Act Hearings," 92nd Cong. 1st Sess. March 1971, p. 313

16/ Environmental Protection Agency, "Reasons underlying the registration decision concerning products containing DDT; 2, 4, 5-T, aldrin and Dieldrin," March 18, 1971, p. 1

17/ 7 USC 135c

18/ Environmental Protection Agency, loc. cit. p. 1.

19/ 7 USC 135d

20/ Environmental Defense Fund, Inc. v. Department of Health, Education & Welfare, 428 F 2d 1083 (DC Cir. 1970)

21/ 21 USC 346a

22/ U.S. Dept. of Agriculture - U.S. Dept. of H.E.W., op cit p. 7-8

23/ 21 USC 348

24/ 21 USC 348c

25/ 428 F 2d 1083 (D.C. Cir. 1970).

26/ 21 USC 346a (d)(1), U.S. Dept. of Agric. - U.S. Dept. of HEW, op cit, p. 8-13.

27/ 21 USC 348a(1)

28/ 21 USC 348a(d)

29/ 21 USC 348a(e)

30/ 428 F 2d 1083 (D.C. Cir. 1970).

31/ U.S. Dept. of Agric. - U.S. Dept. of HEW, op cit. p. 7-8

32/ Ibid p. 14-15

33/ National Academy of Sciences - National Research Council Pesticide Residues Committee, Report on "No Residue" and "Zero Tolerance," 1965, p. 2-3.

34/ Ibid, p. 16.

35/ PR notices 67-10, 67-11, 68-1, 68-2, 68-9, 68-15, 70-3, 70-4, 70-29

36/ PR notices 70-29

37/ U.S. Dept. of Agric. - U.S. Dept. of HEW, op cit,p. 25, Sandra C. Bloom & Stanley E. Degler, Pesticides and Pollution, Bureau of National Affair's Environmental Management Series, 1969, p. 51

38/ 21 USC 331, 332, 333

39/ 21 USC 672

40/ Interview with Dr. John E. Spaulding, APHIS

41/ Consumer and Marketing Service, Consumer Protection Programs CP(S1),Instruction 917-1

42/ 21 USC 671, 672, 673, 674, 676

43/ 21 USC 661, 21 USC 454

44/ P.L. 91 - 597, 84 Stat. 1620

45/ 33 FR 918, 34 FR 1773, 35 FR 12727

46/ 35 FR 12727

47/ 16 CFR 1.11 et seq.

48/ 49 USC 1348(c)

49/ 14 CFR 137.39

50/ U.S. Senate, Subcommittee on Energy, Natural Resources, and the Environment of the Committee on Commerce, "Hearings to Consider the Effects of Pesticides on Sports and Commercial Fisheries," 91st Cong., 1 sess, May 1969. Part I, p. 35; Part II, p. 281-288, 293-296

51/ 33 USC 466g

52/ U.S. Department of the Interior, Federal Water Quality Administration, "Clean Water for the 1970's: A Status Report," June 1970, p. 21.

53/ Pub. L 91-224, April 3, 1970, 84 Stat 112

54/ U.S. Department of the Interior, FWQA, op cit., p. 17

55/ Sections (b)(c)(e), 49 USC 1655 transfer to the DOT powers excercised by other agencies under 18 USC 831-835; 46 USC 170, and 49 USC 1421-1430, 1471, 1472(h).

56/ 49 CFR 170 et seq.

57/ 49 CFR 173, 343

58/ 49 CFR 173. 402 et seq.

59/ 49 CFR 173. 343 et seq.

60/ Information provided by Eric Grundy, Office of Hazardous Materials, DOT.

61/ 49 CFR 177. 841(e)

62/ Information provided by, Lee Santman Acting Assistant General Council. DOT

63/ 49 CFR 171.15, 171.16; 14 CFR 103.28

64 / 18 USC 833, 834 Section 10, 46 USC 170; 49 USC 1472 (h); 49 CFR 173, 174, 175, 176, 177; 14 USC 103

65/ 49 CFR 171.3(b), 178, 14 CFR 103.11.

66/ 18 USC 834.

67/ 49 USC 1472(h)

68/ 49 USC 1471

69/ 46 USC 170 (14)

70/ 46 USC 170 (13)

71/ Information provided by Isaac D. Benkin, Office of Motor Carrier Safety, DOT.

72/ 42 USC 241

73/ Information supplied by ELJ Grandpierre, Office of Pesticides Programs, E.P.A.

74/ 42 USC 243, 246, 264

75/ Information supplied by ELJ Grandpierre.

76/ Pub. L. 9 1-190, 83 Stat. 852

77/ U.S. House of Representatives, Subcommittee of the Committee on Appropriations, 92nd Cong, 2nd Sess, Hearings on Agriculture - Environmental and Consumer Protection Appropriations for 1972, p. 498, 505

78/ US Senate, Subcom. on Agricultural Research & Gen. Legis., op cit, p. 186-187.

79/ U.S. Public Health Service, Transcript of the Conference on the Pollution of Interstate Waters (Lower Mississippi River) at New Orleans, Mar. 5-6, 1964.

80/ 33 USC 407

81/ US v. Standard Oil Co, 384 U.S. 244; U.S. v. Interlake Steel Corp., 297 F Supp. 912, D.C., N. D., Ill., March 27, 1969

82/ 33 CFR 209, 131

83/ U.S. Council on Environmental Quality, "Environmental Quality - 1971"; the second annual report, p. 11-12

84/ 60 Stat. 1080

85/ 70 Stat. 1119, 1122, 16 USC 742a, d, and f.

86/ 1958 U.S. Code Cong., and Admin. News p. 3223

87/ 72 Stat. 479, 16 USC 742d-1

88/ U.S. Senate, 90th Cong, 2d Sess. Report No. 1236, "Effects of Pesticides Upon Fish and Wildlife" 1968, p. 2.

89/ President Nixon's Message to Congress, July 9, 1970.

90/ *See*, *e.g.*, Alaska Stat. §§ 18.33.010 - .110 (Supp. 1970), Fla. Stat. Ann. §§ 487.011 - .14 (Supp. 1971), Mont. Rev. Codes Ann. §§ 27 - 213 to - 245 (Supp. 1971).

91/ *See* Appendix I, Delaware is the only State with no pesticide registration statute.

92/ *See* Rohrman, *The Law of Pesticides: Present and Future*, 17 J. Pub. L. 351, at 363, 364 (1968) [hereinafter cited as Rohrman]. The author was formerly a Legal Coordinator, Pesticides Program, Food and Drug Administration, Consumer Protection and Environmental Health Service, U. S. Dept. of Health, Education and Welfare (1966-68).

93/ A draft of the Uniform Act was approved by the Council of State Governments in 1946. It became the basis for the Federal Act which was passed in 1947. The Association of American Pesticide Control Officials has been instrumental in investigating and recommending changes in the Uniform Act through its Model Bill and Regulation Committee. The Uniform Act has been amended to incorporate both the 1959 and 1964 amendments to the FIFRA. A revised Model Bill has been drafted with the intent that it be compatible with the Association's revised Model Use and Application Act and currently proposed Federal legislation.

94/ Uniform State Insecticide, Fungicide, and Rodenticide Act § 5.

95/ Rohrman, *supra* note 92.

96/ *Id.*

97/ *See* Appendix II, pp. 2-4.

98/ *Id.* States indicating pesticide use restrictions imposed by legislation were Colorado, Connecticut, Florida, Kentucky, Louisiana, Ohio, Rhode Island, and Wisconsin.

99/ California, Colorado, Florida, Indiana, Maryland, Michigan, Minnesota, Montana, New Hampshire, New Mexico, New York, North Dakota, Ohio, Rhode Island, Utah, Vermont, and Washington. While not as explicit in defining pesticides in a restricted use category, legislation in Alaska, Arizona, Illinois, Maine, Massachusetts, and Wisconsin appears to have a similar effect.

100/ In New York, "restricted use pesticide" has been defined as a pesticide". . . (A) which (1) either (a) persists in the environment, or (b) accumulates as either the pesticide per se, a pesticide metabolite, or a pesticide degradation product in plant or animal tissue or product, and is not excreted or eliminated within a reasonable period of time, and which may be transferred to other forms of life; and (2) which by virtue of such persistence or accumulation creates a present or future risk of harmful effects on any organism other than the target organisms; or (B) which the commissioner finds is so hazardous to man or other forms of life that restrictions on its sale, purchase, use, or possession are in the public interest." N. Y. Agric. & Mkts. Law § 148.22 (McKinney Supp. 1970). For examples of other definitions, see Fla. Stat. Ann. § 487.021 (39) (Supp. 1971), Mont. Rev. Codes Ann. § 27 - 216 (34) (Supp. 1971), N. M. Stat. Ann. § 45-9-2.Z. (Supp. 1971).

101/ Arizona, Arkansas, Florida, Illinois, Maryland, Minnesota, New York, Ohio, and Washington (see Comments).

102/ California, Colorado, Massachusetts, Michigan, Montana, New Hampshire, New Mexico, Rhode Island, Utah, and Vermont. In addition, Hawaii requires the licensing of herbicide dealers.

103/ See, e.g., Cal. Agric. Code § 12106 (West Supp. 1971); Minn. Sess. Laws, ch. 449, subd. 3. (1971), amending Minn. Stat. Ann. § 24.072 (1963) as amended; Mont. Rev. Codes Ann. § 27-226 (Supp. 1971), N. Y. Agric. and Mkts. Law § 149.3(6)(e)(Supp. 1970).

104/ See, e.g., 49 N.C.L. Rev. 529, at 534 (1971) (citing hearings regarding proposed change in North Carolina pesticide legislation).

105/ See, e.g., Cal. Agric. Code § 12811 (West 1968), S. C. Code Ann. § 3-162.1 (Supp. 1970).

106/ Arizona, California, Connecticut, Florida, Idaho, Illinois, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New York, Ohio, Rhode Island, Washington, and Wisconsin.

107/ Alaska, Colorado, Montana, and New Mexico.

108/ Michigan, New Jersey, North Dakota, Utah, and Virginia.

109/ Michigan (thallium sulfate), New Mexico. [DDT, DDD (TDE)], New York [Bandane, BHC, DDD (TDE), DDT, Endrin, mercury compounds, selenites and selenates, sodium fluoroacetate, strobane and toxaphene], Texas (thallium sulfate), Vermont (DDT).

110/ See Appendix II, p. 1. See also, R. I. Gen. Laws Ann. § 23-41.1-5. (Supp. 1970) (banning a number of pesticides except under emergency declarations by the Director of Natural Resources).

111/ *See*, *e.g.*, Cal. Sess. Laws, ch. 878 (1971), *amending* Cal. Agric. Code § 12991 (West 1968), *as amended*; Colo. Sess. Laws, ch. 39 § 4 (1971), *amending* Colo. Rev. Stat. Ann. § 6-12-5 (1963); Pub. L. No. 199 § 10(2), Ind. Acts 749, 760 (1971).

112/ *See*, *e.g.*, Ill. Ann. Stat. ch. 5, §§ 271-276 (Smith-Hurd 1966), *as amended*, §§ 271-276 (Smith-Hurd Supp. 1971); Iowa Code Ann. §§ 206A.1-.6 (Supp. 1971); Kan. Stat. Ann. §§ 2-2429 (Supp. 1970).

113/ Alaska, Arizona, Connecticut, Illinois, Indiana, Iowa, Maine, Massachusetts, New Hampshire, Tennessee, Utah, and Wisconsin.

114/ 74 Stat. 372 (1960), 15 U.S.C. 1261 (1970).

115/ Coverage usually includes toxicants, corrosives, irritants, strong sensitizers, flammable substances, substances which generate pressure, and in some cases radioactive substances. *See*, *e.g.*, Calif. Health & Safety Code §§ 28740-28790 (West 1967), *as amended*, §§ 28740-28792 (West Supp. 1971); Mass. Ann. Laws ch. 94B, §§ 1-10 (1967); Va. Code Ann. §§ 3.1-250 to 261 (Repl. Vol. 1966).

116/ National Agricultural Chemicals Ass'n, NAC Law Guide, sec. I (1969 rev.).

117/ Id.

118/ *See*, *e.g.*, Cal. Agric. Code §§ 14201-14381 (West 1968); Ohio Rev. Code Ann. §§ 923.21-.34 (Page 1968); Tex. Rev. Civ. Stat. Ann. art. 192-1 (1969).

119/ Environmental Protection Agency, *Introduction* to Digest of State Pesticide Use and Application Laws (1971) [hereinafter cited as Digest]/ For a discussion of the Miller Amendment, see pp. 17 , *supra*.

120/ Except to some extent FAA regulations affecting aerial applicators. *See* Rohrman, *supra* note 92 at 364.

121/ *See* Digest, *supra* note 119.

122/ The Council of State Governments, 1971 Suggested State Legislation, p. 185. *See also Hearings on H.R. 26, H.R. 1077, H.R. 1722, H.R. 4152, H.R. 4596, H.R. 5182, H.R. 6576 and H.R. 6761 Before the House Comm. on Agriculture*, 92d Cong., 1st Sess., Serial No. 92-A, at 828 (1971); *Hearings on S.232, S.272, S.660, and S.745 Before the Subcomm. on Agricultural Research and General Legislation of the Senate Comm. on Agriculture and Forestry*, 92d Cong., 1st Sess., at 326 (1971).

123/ *See generally*, Digest, *supra* note 119.

124/ *See*, *e.g.*, Nev. Rev. Stat. § 555.260(3) (1969), Ore. Rev. Stat. §§ 573.001 - .260 (1969), Tenn. Code Ann. § 43-609 (Repl. Vol. 1964), Wash. Rev. Code § 17.21.020(22), (26) (Supp. 1970).

125/ *See*, *e.g.*, Idaho Code Ann. § 22-2218 (1968), Ill. Ann. Stat. ch. 5, § 87d.12. (Smith-Hurd 1966), Me. Rev. Stat. Ann. tit. 22, § 1461.1 (Supp. 1970), Md. Ann. Code art. 66C, § 110A-5. (Repl. Vol 1970).

126/ Miss. Code Ann. §§ 5011-01 to -15 (Supp. 1971), N.C. Gen. Stat. §§ 106-65.13 -.21 (Repl. Vol. 1966), N.D. Cent. Code § 2-05-18 (Supp. 1971).

127/ Wyo. Stat. Ann. § 10-4 to -9 (1957).

128/ Ark. Stat. Ann. §§ 77-211 (Repl. Vol. 1957); Hawaii Rev. Stat. §§ 151-1 to -13 (1968) ; Idaho Code Ann. §§ 22-2224 to - 2230 (1968); Ill. Ann. Stat. ch. 5 §§ 87a.1-a.8 (Smith-Hurd 1966); Mich. Stat. Ann. §§ 12.366 (1967); N. Y. Agric. & Mkts. Law § 151-h (McKinney Supp. 1970); Ohio Rev. Code Ann. §§ 921.06, .07, .99 (Page 1968); Okla. Stat. Ann. tit.2, §§ 3-251 to -259 (Supp. 1971); Ore. Rev. Stat. §§ 573.402 - .992 (1969); Pa. Stat. Ann. tit. 3, §§ 214.51 - .55 (Supp. 1970); Tex. Rev. Civ. Stat. Ann. art. 135b - 4 (1969), *as amended* , -4.2(f),.17(a) (Supp. 1970).

129/ *See*, *e.g.*, Conn. Gen. Stat. Rev. §§ 19-300 l(a),(b) (1968), Md. Ann. Code art. 66C, §§ 110A-2, -3 (Repl. Vol. 1970), Okla, Stat. Ann. tit. 2, § 3-82(a), (b) (Supp. 1971).

130/ *See*, *e.g.*, La. Rev. Stat. § 3:1829 (Supp. 1971); N. M. Stat. Ann. § 67-34-3.B. (Supp. 1971); Okla. Stat. Ann. tit. 2, § 3-272(b) (1971).

131/ *See*, *e.g.*, Ore. Rev. Stat. § 573.051 (1969); Tenn. Code Ann. § 43-610 (Repl. Vol. 1964).

132/ *See*, *e.g.*, Conn. Gen. Stat. Rev. § 19-300l.(c) (1968); Nev. Rev. Stat. §§ 555.320(4)(1969).

133/ *See*, *e.g.*, Tenn. Code Ann. § 43-610 (Repl. Vol. 1964); Wash. Rev. Code § 17.21.065 (Supp. 1970).

134/ See, e.g., Mont. Rev. Codes §§ 27-221, -223 (Supp. 1971); Wash. Rev. Code §§ 17.21.070,.110 (Supp. 1970).

135/ Md. Code Ann. art.66C, §§ 110A-2.(a) (Repl. Vol. 1970). See also Pub. L. No. 199 § 2 (24), Indiana Acts 754 (1971) providing that "pesticides for use by prescription only" require prescription "by a qualified pest management specialist approved by the state chemist." (emphasis added)

136/ See, e.g., Ariz. Rev. Stat. § 3-378 (Supp. 1971); Colo. Rev. Stat. Ann. § 6-14-7 (Supp. 1967); La. Rev. Stat. § 3: 1627 (Supp. 1971).

137/ See, e.g., Mich. Stat. Ann. §§ 12.353(6) (Supp. 1971).

138 The results of the Minnesota survey are illustrative. By far the most frequent means of restricting pesticide use for example was by regulation rather than legislation. See Appendix II pp. 2-4 infra.

139/ See, e.g., Colo. Rev. Stat. Ann. §§ 6-14-4,-13,-14,-15 (Supp. 1967); Nev. Rev. Stat. §§ 555.370,.380,.390 (1969); N. H. Rev. Stat. Ann. §§ 149-D:6,:7 (Supp. 1970).

140/ See, e.g., Mass. Ann. Laws ch. 94B, § 21C. (1967); N. Y. Agric. & Mkts. Law § 151-r.(3) (McKinney Supp. 1970).

141/ See Rohrman, supra note 92 at 392, 393. The author indicates that, by 1968, 17 States had adopted rules and regulations designed after, or corresponding to, the Federal regulations governing dangerous materials. Id. n. 213.

142/ Id.

143/ Note 111, supra. See also, N. J. Sess Laws ch. 176 § 4 (1971); R.I. Gen. Laws Ann. § 23-41.1-6 (Supp. 1970).

144/ See, e.g., Pub. L. No. 199 § 34, Indiana Acts 767 (1971); Md. Code Ann. art. 66C § 110A-3.(e) (Repl Vol. 1970); Mont. Rev. Codes Ann. 27-244 (Supp. 1971); Ohio Rev. Code Ann. § 921.51 (Supp. 1970); Utah Code Ann. § 4-4-39 (2) (Supp. 1971).

145/ See, e.g., Oregon Laws ch. 699 (1971).

146/ Cath, Report of State Programs - Summary, Proceeding of ... National Working Conference on Pesticide Disposal 78-84 (1970) (conference sponsored by The Working Group, Subcomm. on Pesticides, President's Cabinet Comm. on the Environment, Beltsville, Md., June 30, July 1, 1970). See also pp. 54-77 for supplemental reports from specific States.

147/ Florida, Massachusetts, Michigan, Montana, New Hampshire, Wisconsin.

148/ Connecticut, Florida, Illinois, Michigan, New Hampshire, New Mexico, Ohio.

149/ *See*, *e.g.*, Kan. Stat. Ann. §§ 2-2432, -2433 (Supp. 1970); Wash. Rev. Code §§ 17.21.010 - .931 (Supp. 1970).

150/ *See*, *e.g.*, Ark. Stat. Ann. §§ 77-216, -223 (Supp. 1969); Iowa Code Ann. §§ 206.5, -9 (1969); Okla. Stat. Ann. tit. 2, § 3-86 (1964).

151/ *See*, *e.g.*, Colo. Rev. Stat. Ann. § 6-14-19 (Supp. 1967); La. Rev. Stat. § 3:1632 (Supp. 1971).

152/ *See*, *e.g.*, Ark. Stat. Ann. § 77-225 (Supp. 1969); Mich. Stat. Ann. § 12.353(2) (Supp. 1971).

153/ *See*, *e.g.*, Md. Ann. Code art 66C, §§ 110A-3.(h) (Repl. Vol. 1970); Ohio Rev. Code §§ 921.45 (Page Supp. 1970); Utah Code Ann. § 4-4-17(d) (Supp. 1971). *See also* Conn. Gen. Stat. Rev. § 19-300p.(d) (Supp. 1969).

154/ For an example of specific treatment of farm applicators requiring an annual use permit for restricted use pesticides and a written examination, see Mont. Rev. Codes Ann. § 27-228 (Supp. 1971).

155/ *See*, *e.g.*, N. Y. Agric. & Mkts. Law § 151-u. (McKinney Supp. 1970); Ohio Rev. Code Ann. § 921.42(A) (Page Supp. 1970); Utah Code Ann. § 4-4-19 (Supp. 1971).

156/ *See*, *e.g.*, Pub. L. No. 199 § 10(1), Indiana Acts 760 (1971); N. Y. Agric. & Mkts. Law §§150.1(4); 149.3, .4, (McKinney Supp. 1970); Ohio Rev. Code Ann. § 921.42(B), (C) (Page Supp. 1970).

157/ *See*, *e.g.*, N. Y. Agric. & Mkts. Law § 149.4.(1) (McKinney Supp. 1970); N. M. Stat. Ann. § 45-9-3.D (Supp. 1971).

158/ *See*, *e.g.*, Mont. Rev. Codes Ann. § 27-228, -230. (Supp. 1971), N. Y. Agric. and Mkts. Law § 149.4(3) (e) (McKinney Supp. 1970).

159/ The Council of State Governments, "The Pest Control Compact"1-3 (1965).

160/ California, Delaware, Illinois, Maine, Michigan, Minnesota, New Hampshire, New Jersey, North Dakota, Pennsylvania, Tennessee, Washington, Wisconsin, Virginia.

161/ *See e.g.*, Ariz. Rev. Stat. Ann. §§ 3-331.01 to .11 (Supp. 1971) (pest control districts); Cal. Health & Safety Code §§ 2800 - 2910 (West 1970) (pest abatement districts); Ill. Ann. Stat. ch. 111½ §§ 74-85a. (Smith-Hurd Supp. 1971) (mosquito abatement districts); Tex. Rev. Civ. Stat. Ann. art. 135c (1969) (noxious weed control districts).

162/ *See*, *e.g.*, Cal. Gov't Code §§ 61600(g) (West Supp. 1971) (community services districts).

163/ *See*, *e.g.*, Colo. Rev. Stat. Ann. §§ 6-5-1 to -15 (1963), *as amended* §§ 6-5-5.,-11 (Supp. 1965) (pest control districts); Idah Code Ann. §§ 39-2801 to 2809 (1961), *as amended* §§ 39-2810,-2811 (Supp 1969) (mosquito abatement districts); Mont. Rev. Codes Ann. §§ 16-1701 to -1723 (1967), *as amended* §§ 16-1709.1,-1713 (Supp. 1971) (weed control and weed seed extermination districts); N. M. Stat. Ann. §§ 45-10-1 to -31 (1966) (noxious weed control districts).

164/ *See e.g.*, N. Y. Pub. Health Law § 1528 (county mosquito control commissions).

165/ *See*, *e.g.*, Neb. Rev. Stat. §§ 2-1053 to -1059 (1970) (pest eradication districts); N. M. Stat. Ann. §§ 45-8-18 (Supp. 1971) (grasshopper and other range pest control districts).

166/ Council on Environmental Quality,"Environmental Quality - 1970"; the first annual report, p. 140, 209, U.S. Agency for International Development, Manual Circular 1612, 10.3, February 12, 1971, p. 1-2

167/ Food and Agriculture Organization of the United Nations - World Health Organization, Codex Alimentarius Commission, "Procedural Manual," First edition 1968; also Report of the Eight Session, 1971; "Setting the Standards for International Food Trade," mimeographed material, no date

168/ FAO - WHO, *Report of the First Meeting of the Codex Committee on Pesticide Residues*, May 1966.

169/ FAO - WHO, Procedural Manual p. 68.

170/ FAO - WHO, *Report of the First Meeting etc*. p. 2.

171/ FAO - WHO, "Agenda item 6(b) of Ad Hoc Working Group of the Codex Committee: Outline of the Procedure Followed by the Joint FAO WHO Meeting on Pesticide Residues", July 1971, p. 1-4.

172/ See FAO, Pesticide Residues in Food: Report of the 1970 Joint FAO WHO Meeting, FAO Agricultural Studies No. 87, 1971.

173/ FAO - WHO, Codex Alimentarius Commission, op cit, p.

174/ Ibid.

175/ FAO - WHO, Codex Alimentarius Comn., *Recommended International Tolerances for Pesticide Residues*, 2nd Series 1970, p. 1, 7-12.

176/ FAO,"Pesticide Residues in Food:"Report etc., p. 23-37.

177/ FAO, *Guidelines for Legislation Concerning the Registration for Sale and Marketing of Pesticides*. p. 1-2.

178/ Ibid p. 4, 6.

179/ op cit p. 9.

180/ op cit p. 6.

181/ op cit p. 7.

182/,183/ op cit p. 8

184/ HR 4152 and 5272.

185/ International Labour Office, *Permissible Levels of Toxic Substances in the Working Environment*, p. 1.

186/ Ibid p. 182 - 405.

187/ op cit. p. 13.

188/ Ibid p. 11-12.

189/ A. V. Holden, "Annex II - Report of Cooperative Study Programs 1966-71" in *Report of the Study Group on Unintended Occurrence of Pesticides* (Organization for Economic Cooperation and Development) December 1970, p. 74-76.

190/ Organization for Economic Cooperation and Development, Press Release, Paris, Nov. 25, 1970, p. 2-3.

191/ OECD, *Report of the Study Group on Unintended Occurrence of Pesticides*, Dec., 1970, p. 6-7.

192/ Information supplied by Wm. Upholt, U.S. representative on the Sector Group on the Unintended Occurrence of Chemicals in the Environment.

193/ OECD, "Resolution of the Council Concerning A Procedure for Notification and Consultation on Measures for Control of Substances Affecting Man or his Environment," May 25, 1971.

194/ OECD, "Notification and Consultation on Measures for Control of Substances Affecting Man or his Environment - Arsenic and Lead Compounds in Pesticides," October 5, 1971; "Notification and Consultation on Measures for Control of Substances Affecting Man or his Environment - Pesticide Uses of Chlordane and Heptachlor Compounds," Nov. 8, 1971.

195/ OECD, Report of the Study Group etc, Annex III p. 8.

196/ Ibid p. 82

197/ op. cit. p. 83.

198/ Presidents Science Advisory Com., Use of Pesticides, 1963, p. 16-17, 20.

199/ Interdepartmental Coordination of Activities Relating to Pesticides by the Department of Agriculture, the Department of Health Education, and Welfare, and the Department of the Interior, 1964, (29 FR 5808).

200/ National Academy of Sciences - National Research Council, Report of the Task Force on the Pesticides Regulation Division, Nov. 1965, p. 31 - 34, U.S. House of Representatives, 91st Cong., 1st Sess., Hearings before a Subcommittee of the Committee on Government Operations on Deficiencies in Administration of Federal Insecticide, Funigicide, and Rodenticide Act, 1969, p. 64-75, 301-307.

201/ U.S. House of Representatives, Deficiencies in Administration of the Federal Insecticide, Fungicide, and Rodenticide Act: Eleventh Report of the House Committee on Government Operations, Nov., 1969, p. 5-6; U.S. Department of Health, Education and Welfare,"Report of the Secretary's Commission on Pesticides and Their Relationship to Environmental Health,"December 1969, p. 7.

202/ Interdepartmental Agreement for Protection of Public Health and Quality of the Environment, announced March 3, 1970.

203/ 92d Cong., 1st Sess. S. 745 § 1(b); HR 4152, § 1(b).

204/ U.S. Cabinet Committee on the Environment, Subcommittee on Pesticides, "Charter of the Working Group," FR Doc 70 - 3661; Filed Mar. 25, 1970; U.S. Working Group on Pesticides, Annual Report: February 1970 - February 1971 p. i, 1-5:

205/ U.S. Working Group on Pesticides;"National Policy on Pesticides," June 1970, p. 1-2.

206/ U.S. Working Group on Pesticides,"Annual Report" etc. p. 1 .

207/ U.S. Secretary's Pesitcide Advisory Committee, "Report to the Secretary of Health, Education, and Welfare," 1970. U.S. Environmental Protection Agency, Order 1385.5, Hazardous Materials Advisory Committee, May 21, 1971.

208/ U.S. Secretary's Pesticide Advisory Committee, loc cit.

209/ U.S. Environmental Protection Agency, loc cit.

210/ Information supplied by W. Wade Talbot, Executive Officer of HMAC

211/ Information supplied by W. B. Ennis Jr., Chairman Department Weed Committee, USDA

212/ USDA - USDI Joint Weed Committee, "Guidelines for the Review and Advice on Requests for the Introduction of Foreign Organisms into the Continental United States for the Control of Weeds" (no date); Memorandum to Members of the Subcommittee on Biological Control of Weeds, from W. B. Ennis, Jr. Chairman Departmental Weed Committee, USDA and Paul Howard, Chairman, Departmental Weed Committee, USDI. April 11, 1969.

213/ President's Cabinet Committee on the Environment, Working Group of the Subcommittee on Pesticides. "Problems confronting tasks of the Interagency Ad Hoc Committee on Use of Herbicides in Aquatic Sites," Mimeographed material 1970.

214/ Information supplied by W. B. Ennis Jr.

215/ Proposed Federal Noxious Weed Act draft 4/27/70; USDA Environmental Statement prepared in accordance with Sec 102(2)(c) of P.L. 91-190, Feb. 1, 1970, re. USDA Legislative Proposal for the Enactment of a Noxious Weed Control Act.

216/ U.S. Department of the Interior Memorandum from the Secretary of the Interior to Assistant Secretaries, Heads of all Bureaus and Offices; "Review of Pesticide Use Programs," June 12, 1970; information supplied by Walter W. Dykstra, Chairman of the USDI Intradepartmental Pesticides Working Committee.

217/ U.S. Department of the Interior, "Department of the Interior Responsibilities and Police on Pesticides," June 12, 1970; revised restricted pesticides list for 1972.

218/ U.S. Department of Defense Directive No. 5154.12, Subject: The Armed Forces Pest Control Board, August 21, 1968; U.S. Armed Forces Pest Control Board, Annual Report - Calendar Year 1970.

219/ U.S. Armed Forces Pest Control Board, loc cit. p. 2.

APPENDIX I

* Dotted line indicates statute extends to cover aspects of both distribution and sale and use and application.

State	Distribution and Sale 1/	Selected State
Alabama	Ala. Code tit. 2, §§337(1)-(9) (1958).	
Alaska	Alaska Stat. §§18.33.010-.110 (Supp. 1970).	----------
Arizona	Ariz. Rev. Stat. Ann. §§3-341 to -357 (1956), *as amended*, §3-342 (Supp. 1971).	----------
Arkansas	Ark. Stat. Ann. §§77-201 to -211 (Repl. Vol. 1957), *as amended*, §§77-201 to -213 (Supp. 1969).	
California	Cal. Agric. Code §§12751-12994 (West 1968), *as amended*, §§12874-12991 (West Supp. 1971), and ch. 878, Cal. Sess. Laws (1971).	----------
Colorado	Colo. Rev. Stat. Ann. §§6-12-1 to -12 (1963), *as amended*, Colo. Sess. Laws ch. 39 (1971).	
Connecticut	Conn. Gen. Stat. Rev. §§19-300 a.-j., t. (1968).	
Delaware		
Florida	Fla. Stat. Ann. §487.011-.14 (Supp. 1971).	----------
Georgia	Ga. Code Ann. §§5-1501 to -1516 (1962).	
Hawaii	Hawaii Rev. Stat. §§149-1 to -12 (1968), *as amended*, §149-4 (Supp. 1970).	----------
Idaho	Idaho Code Ann. §§22-3401 to -3413 (1968).	
Illinois	Ill. Ann. Stat. ch. 5, §§87c.1-c.13 (Smith-Hurd 1966), *as amended*, §§87c.5, c.8 (Smith-Hurd Supp. 1971). ch. 5, §§256-267 (Smith-Hurd Supp. 1971).	----------
Indiana	Pub. L No. 199, Ind. Acts 749 (1971).	----------
Iowa	Iowa Code Ann. §§206.1-.11 (1969), *as amended*, §§206.3-.12 (Supp. 1971).	----------
Kansas	Kan. Stat. Ann. §§2-2201 to -2215 (1964).	
Kentucky	Ky. Rev. Stat. Ann. §§217.540-.640 (1963), *as amended*, §§217.540-.558 (Supp. 1971).	
Louisiana	La. Rev. Stat. §§3:1601-:1609 (Supp. 1971).	
Maine	Me. Rev. Stat. Ann. tit. 7, §§581-591 (1964).	----------
Maryland	Md. Ann. Code art. 48, §§129-139 (Repl. Vol. 1971).	
Massachusetts	Mass. Ann. Laws ch. 94B, §§11-21 (1967), *as amended*, §§11-20 (Supp. 1970).	
Michigan	Mich. Stat. Ann. §§12.352 (1)-(13) (1967), *as amended*, §§12.352(3)-(5) (Supp. 1971), and Pub. Acts 1971, No. 90.	
Minnesota	Minn. Stat. Ann. §§24.069-.077 (1963), *as amended*, §§24.071-.077 (Supp. 1971) and ch. 449, Minn. Sess. Laws (1971).	
Mississippi	Miss. Code Ann. §§5000-01 to -14 (Supp. 1971).	
Missouri	Mo. Ann. Stat. §§263.270-.380 (1959).	
Montana	Mont. Rev. Codes Ann. §§27-213 to -245 (Supp. 1971).	----------

Pesticide Laws Use and Application 2/

-----Ariz. Rev. Stat. Ann. §§3-371 to -390 (Supp. 1971).

Ark. Stat. Ann. §§77-214 to -226 (Supp. 1969).

Cal. Agric. Code §§11401-11940 (West 1968), as amended, §§11402-12121 (West Supp. 1971).
---------------------§§14001-14098 (West 1968), as amended, §§14001-14104 (West Supp. 1971).

Colo. Rev. Stat. Ann. §§6-14-1 to -20 (Supp. 1967).

Conn. Gen. Stat. Rev. §§19-300k.-s., u. (1968), as amended, §§19-300m(e), p(a), p(d) (Supp. 1969).

-----Hawaii Rev. Stat. §§151-1 to -13 (1968). (herbicides)

Idaho Code Ann. §§22-2208 to -2230 (1968).

Ill. Ann. Stat. ch. 5, §§37d1.-d17. (Smith-Hurd 1966).

Kan. Stat. Ann. §§2-2413 to -2437 (Supp. 1970).

La. Rev. Stat. §§3:1622-:1634 (Supp. 1971).

-----Me. Rev. Stat. Ann. tit. 22, §§1451-1465 (Supp. 1970), as amended, ch. 377, Pub. Laws 1971.

Md. Ann. Code art. 66C, §§110A-1 to -10 (Repl. Vol. 1970).

Mass. Ann. Laws ch. 94B, §§21A. -22 (1967), as amended, §21C. (Supp. 1970).

Mich. Stat. Ann. §§12.353(1)-(10) (1967), as amended, §§12.35(1)-(10) (Supp. 1971).

Minn. Stat. Ann. §§18.031-.035 (1963), as amended, §18.031-.036 (Supp. 1971) and ch. 449, Minn. Sess. Law (1971).

Miss. Code Ann. §§5011-01 to -15 (Supp. 1971). (aerial applicators)

State	Distribution and Sale [1]
Nebraska	Neb. Rev. Stat. §§2-2601 to -2611 (1970).
Nevada	Nev. Rev. Stat. §§586.010-.450 (1967).
New Hampshire	N. H. Rev. Stat. Ann. §§438.1-.17(1955), *as amended*, ch. 19, N. H. Laws (1971).
New Jersey	N. J. Stat. Ann. §§4:8A-1 to -27 (1959), *as amended*, §§4:8A-4, -8 (Supp. 1971). N. J. Sess. Laws ch. 176 (1971).
New Mexico	N. M. Stat. Ann. §§45-9-to-12 (1953), *as amended*, §§45-9-1 to -3 (Supp. 1971).
New York	N. Y. Agric. and Mkts. Law §§148 to 151-g (McKinney Supp. 1970).
North Carolina	N. C. Gen. Stat. §§106-65.1 to -12 (Repl. Vol. 1966).
North Dakota	N. D. Cent. Code §§19-18-01 to -11 (1960), *as amended*, §§19-18-02 to -11 (Supp. 1971).
Ohio	Ohio Rev. Code Ann. §§921.11-.20, .99 (Page 1968), *as amended*, §§921.11-.16, .99 (Page Supp. 1970).
Oklahoma	Okla. Stat. Ann. tit. 2, §§3-61 to -70 (1964), *as amended*, §3-63 (Supp. 1971).
Oregon	Ore. Rev. Stat. §§634.211-.990 (1969), *as amended*, ch. 699, Oregon Laws 1971.
Pennsylvania	Pa. Stat. Ann. tit. 3, §§111.1-.13 (1963).
Rhode Island	R. I. Gen. Laws Ann. §§2-8-1 to -28 (1956).
South Carolina	S. C. Code Ann. §§3-151 to -176 (1962), *as amended*, §§3-160 to -177 (Supp. 1970).
South Dakota	S. D. Comp. Laws §§39-19-1 to -52 (1967).
Tennessee	Tenn. Code Ann. §§43-701 to -713 (Repl. Vol. 1964).
Texas	Tex. Rev. Civ. Stat. Ann. art. 135b-5 (1969), *as amended*, ch. 308, Tex. Sess. Laws (1971).
Utah	Utah Code Ann. §§4-4-1 to -13 (1953), *as amended*, §§4-4-2, -4 (Supp. 1971).
Vermont	Vt. Stat. Ann. tit. 6, §§911.-928. (1958), *as amended*, §§911., 918. (Supp. 1971).
Virginia	Va. Code Ann. §§3.1-189 to -249 (Repl. Vol. 1966), *as amended*, §§3.1-189 to -241 (Supp. 1971).
Washington	Wash. Rev. Code §§15.57.010-.930 (1361).
West Virginia	W. V. Code Ann. §§19-16A-1 to -13 (Repl. Vol. 1971).
Wisconsin	Wis. Stat. Ann. §§94.67-.71 (1957), *as amended*, §§94.67-.71 (Supp. 1971).
Wyoming	Wyo. Stat. Ann. §§35-254 to -262 (1957), *as amended*, §§35-258, -260 (Supp. 1971).

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[1] Does not include State laws covering hazardous substances or livestock remedies.

[2] Does not include State laws covering structural pest control operators, tree surgeons, or related professions nor pesticide application laws with

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Nev. Rev. Stat. §§555.260-.460 (1969).

N. H. Rev. Stat. Ann. §§149-D:1-:11 (Supp. 1970).

N. M. Stat. Ann. §§67-34-1 to -8 (Supp. 1971).

N. Y. Agric. and Mkts. Law §§151-m. to -w. (McKinney Supp. 1970).

N. C. Gen. Stat. §106-65.13 to .21 (Repl. Vol. 1966). (aerial applicators)

N. D. Cent. Code §2-05-18 (Supp. 1971). (aerial applicators)

Ohio Rev. Code Ann. §§921.41-.53, .99 (Page Supp. 1970).

Okla. Stat. Ann. tit. 2, §§3-81 to -88 (1964), *as amended*, §§3-81 to -84 (Supp. 1971).

Ore. Rev. Stat. §§573.001-.260 (1969).

R. I. Gen. Laws Ann. §§23-41-1 to -12 (1968), *as amended*, §§23-41-4, -41.1-1 to -25 (1970).

S. D. Comp. Laws §§38-21-1 to -13 (1967).

Tenn. Code Ann. §§43-609 to -618 (Repl. Vol. 1964).

-----Tex. Rev. Civ. Stat. Ann. art. 135b-4 (1969), *as amended*, art. 135b-4. §§2,17 (Supp. 1970), and ch. 242, Tex. Sess. Laws (1971). (herbicides)

Utah Code Ann. §§4-4-14 to -28 (1953), *as amended*, §§4-4-15 to -29 (Supp. 1971).
--------------------§§4-4-30 to -40 (Supp. 1971).

-----Vt. Stat. Ann. tit. 6, §§1101.-1108.(Supp. 1971).

Wash. Rev. Code §§17.21.010-.931 (Supp. 1970).

Wyo. Stat. Ann. §§10-4 to -9 (1957). (aerial applicators)

limited coverage or scope. *See* Table 2, *supra* p. for more specific information.

Appendix II

SUMMARY OF MINNESOTA PESTICIDE QUESTIONNAIRE RELATING TO THE BANNING OR RESTRICTING THE USE OF PESTICIDES

The first basic question asked each state was: Has your state banned (meaning completely outlawed - without any qualifications) any pesticides? If the question was answered affirmatively, subsequent questions requested the state to indicate how the action was taken and to list the pesticide materials banned.

Five states replied affirmatively to the first basic question, and the information obtained is summarized as follows:

(1) Michigan - by administrative order has banned the use of Thallium Sulfate. (See Page 3)

(2) New Mexico - by legislation has banned the use of DDT and DDD (TDE). (See Page 3)

(3) New York - by regulation has banned the use of Bandane, BHC, DDD (TDE), DDT, Endrin, Mercury Compounds, Selenites and Selenates, Sodium fluoroacetate, Strobane and Toxaphene. (See Page 3)

(4) Texas - by administrative order has banned the use of Thallium Sulfate. (See Page 4)

(5) Vermont - by legislation has banned the use of DDT. (See Page 4)

The second basic question asked each state was: Has your state restricted the use of any pesticides? If the question was answered affirmatively, subsequent questions requested the state to indicate how the action was taken, to list the pesticide materials restricted, and to state whether or not dealer or user permits are required.

The information received from each state in reply to the above questions is summarized by states on the following pages.

(Information in this Appendix was supplied by Dr. Rollin M. Dennistoun, Administrative Supervisor, Minnesota Department of Agriculture. This summary was prepared by Dr. Dennistoun on May 10, 1971.)

SUMMARY OF INFORMATION AS TO THE RESTRICTED USE OF PESTICIDES

State	Pesticide Use Restrictions					Restricted Use Pesticides													Permits Required				Comments
			By												Others				Dealer		User		
	Yes	No	Legislation	Regulation	Administrative Order	DDT	DDD	Dieldrin	Endrin	Heptachlor	Lindane	Aldrin	Chlordane	Toxaphene	Thallium sulfate	Compound 1080	Phosphorus paste	Alkyl mercuries	Yes	No	Yes	No	
Alabama		x																					
Alaska																							Are considering.
Arizona	x			x		x	x												x		x		
Arkansas	x			x															x*			x	Notification or minimum distance required for use of: volatile esters of 2,4-D and 2,4,5-T; oil soluble amines and diamines of 2,4-D and 2,4,5-T; invert 2,4-D and 2,4,5-T; and low volatile esters of 2,4-D and Picloram (Tordon) near susceptible crops. *Required for distributing 2,4-D, 2,4,5-T and similar products in containers of one gallon or more and/or user case lots.
California	x			x		x*	x*	*	*	*				*	x	x		x		x	x		*Use permit for these materials has been required since 1964. For further information write the Department of Agriculture.
orado	x		x													x*							*For sale only to agencies of state or federal government. Restricted to recommended uses only.
Connecticut	x		x			x	x	x	x	x		x		x		x				x	x*		*For aerial and aquatic pest control.
Delaware		x																					No such legislation pending.
Florida	x		x	x		x	x	x	x	x	x	x	x	x	x			x	x*		x		*Dealers must be licensed.
Georgia	x			x	x											x				x		x	
Hawaii		x																					
Idaho	x			x																x	x*		*Use of all chlorinated hydrocarbons by aerial applicators is restricted in one county.
Illinois	x			x		x													x		x		
Indiana		x																					
Iowa	x																						Use of 2,4-D H.V. esters prohibited in all of four counties and in part of one county.

SUMMARY OF INFORMATION AS TO THE RESTRICTED USE OF PESTICIDES

State	Pesticide Use Restrictions					Restricted Use Pesticides													Permits Required				Comments
			By												Others				Dealer		User		
	Yes	No	Legislation	Regulation	Administrative Order	DDT	DDD	Dieldrin	Endrin	Heptachlor	Lindane	Aldrin	Chlordane	Toxaphene	Thallium sulfate	Compound 1080	Phosphorus paste	Alkyl mercuries	Yes	No	Yes	No	
Kansas		x																					Will not register Lindane vaporizers.
Kentucky	x		x		x	x														x		x	Fertilizer-pesticide mixtures for tobacco.
Louisiana	x		x	x											x					x		x	Hormone type 2,4-D and Arsenical Acid.
Maine	x			x		x	x	x	x	x		x		x						x	x		
Maryland	x			x*		x	x	x	x	x	x	x	x			x			x		x		*Also parathion, phosdrin, sodium arsenite and TEPP.
Massachusetts	x			x		x	x	x	x	x	x	x	x	x						x	x		Permits for dieldrin only. Other restricted materials prohibited for out-of-doors use
Michigan	x				x	x					x									x		x	(See Page 1)
Minnesota	x			x		x	x	x	x	x	x	x			x*	x*			x		x		*Restricted by Structural Pest Control Regulations.
Mississippi		x																					
Missouri		x																					
Montana		x																					
Nebraska		x																					
Nevada		x																					Will not register products if USDA has not established a finite tolerance.
New Hampshire	x			x		x	x	x	x	x	x	x		x						x	x		Sodium arsenite.
New Jersey		x																					
New Mexico		x																					(See Page 1)
New York	x			x*				x		x	x	x	x						x		x		(See Page 1) *Contact Department of Agriculture.
North Carolina	x				x	x*	x*	x*	x	x*	x*	x*	x*	x	x					x		x	*Not permitted for use around tobacco.
North Dakota		x																					
Ohio	x		x	x		x	x				x	x					x	x	x		x		New Pesticide Use and Application Law and Regulations effective 3-1-71.

SUMMARY OF INFORMATION AS TO THE RESTRICTED USE OF PESTICIDES

State	Pesticide Use Restrictions					Restricted Use Pesticides													Permits Required				Comments
			By												Others				Dealer		User		
	Yes	No	Legislation	Regulation	Administrative Order	DDT	DDD	Dieldrin	Endrin	Heptachlor	Lindane	Aldrin	Chlordane	Toxaphene	Thallium sulfate	Compound 1080	Phosphorus paste	Alkyl mercuries	Yes	No	Yes	No	
Oklahoma		x																					Have proposal up for restriction of some pesticides and permit requirements.
Oregon		x																					Action pending.
Pennsylvania		x																					
Rhode Island	x		x			x	x	x	x	x	x	x	x	x							x		Written authorization required to purchase and use restricted insecticides.
South Carolina	x																						All restricted same as USDA.
South Dakota		x																					
Tennessee						x	x	x		x	x	x	x		x	x	x			x		x	All restricted same as USDA and also Arsenic compounds and 2,4,5-T.
Texas		x																					(See Page 1)
Utah	x			x				x*		x*										x		x	*Restricted use on hay and forage crops only.
Vermont	x			x											x	x	x			x		x	(See Page 1)
Virginia	x			x		x	x	x	x	x	x	x	x		x	x	x			x		x	Labels may include only the permitted uses.
Washington	x			x		x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		Pesticide dealers must be licensed. Certain restricted pesticides can be sold only to users with permits.
West Virginia		x																					
Wisconsin	x		x	x		x	x	x	x	x	x	x						x		x	x*		*Permit required for all uses except those published by the Department. Department publishes no uses for DDT or Endrin.
Wyoming	x			x							x									x		x	
Puerto Rico	x			x	x	x	x	x	x	x	x	x			x	x	x	x		x		x	All restricted same as USDA and also 2,4,5-T and Sodium Arsenite.
Canada	x*					x	x	x	x	x	x	x	x	x						x	x		*Federal position. Some provinces have placed further restrictions on the listed compounds.

U.S. GOVERNMENT PRINTING OFFICE: 1972 514-147/52 1-3